

9187

# THE CHILDREN'S ENCYCLOPÆDIA

RESEARCHED BY RICHARD SETHIA

JAN 11 1951

BY KANEH

EDITED BY

ARTHUR MLE

VOLUME EIGHT

LONDON

THE EDUCATIONAL BOOK CO. LTD

Thi i sh i guif e ly to the gri i pl i co t s f thi i m It s i po que ti  
give th tll of all th Poems d Rhym Leg ds Probl n c low f g que ti  
n the W d o'ok d ma y t thi g th m i t h l a b t l  
cases are gi on the pages wh re th se parts of book begi The full li t f th se  
thi se oyo t t th big d t th whol we k at th e d f thi i m

The Wonderful Wonderful Music	4820
The Behaviour of a Sound	4013
What Light is Made of	5010
The Wonderful Keyboard	5110
Natural Curiosities	3

A Field of Cotton  
A Little Jack Frost Artist  
A Little Folk on Monument  
Where the Sugar Come From  
The Salt of the Earth

The End of Paul's Life	498
The Last Days of Paul	499
John the Beloved Disciple	500
The Twelve Apostles	512
The Wonders of the World	521

Fl Silent Prince  
Th Cuning Larner With Dwarf  
Th Dn th Cam Home Agn  
Flw Rip Van Winkl Wnt Hcm  
Whn B' Yon I t s s y our f lter ?  
Th Four W M n tci  
Th I t t l Man by t s r t sh r  
A C l e x r Bad M y  
Ho th Fl f W a t c n t Out  
Th I t t l I n d o t s n t n  
Th I t t l y n t l O n t  
M D o l l e r t t t t t t  
Fl Th t W h t n t t t t n n

How to Remember	45 7
What Happens When We Think	19 4
How To Think	2c
Why We Do Things	513f
Our Lives in the Nation	5 8f

Is a Stone Alive?	}	1	a	48
Can a Train Run on On Rail?				43
Why Do sa Rail Bounce?				5
What Makes a Watch Co?				516
Must All Things In?				2

Flow r of the Mount ma	49
Flow rs of the Stream	49
Flow rs of the Bay, in f	50
Flow r of the S i f f	18
Flow r of the Cr d n	

Famous Modern Thinker	45
Famous Maker of Home	40
Famous American Writer	2
Famous Man of Science	14
Writer of Other Language	1

That's a Fact	4
The Time	4
The Wonderful City of Sheny	4
The Sky	4
The City	4

Light W. of Isl. Story	4
Balchou and Asoria	1
The Boat at the Island	10
The Boat at the Island	1
The Boat at the Island	5

Th Snyk th a Hun dred H 1  
Th Slay th En  
Th Cytur th S 1 St  
Cl a n th St l  
Th Arc h th E r  
Th R i w th Briz n W  
Th M f f f or C r  
Th Mat l th Hor  
Th C all th Amz n Q u e n  
Th Battl th of C an  
Th C l n A p p l  
Th Dec th l l l l l l l l

field audit B I  
fl cuff audit Tr  
Th l r n l v  
ln St m th Ox st l  
fl cut th j x l suth S  
l Mx nll Ncr s s t  
fl S l  
lt Lcs s s t t aw  
f y k l t f  
ffr i sup th c nfr n

## THE DEAD EMPIRES

ONE of the most famous sayings ever written is the great saying of Paul The things which are seen are temporal but the things which are not seen are eternal. Even empires pass away and nothing remains of them but the unseen things that made them great. Many great empires have existed in the world of which not as much as a shadow remains to-day. Thousands of years ago they rose and grew and flourished and then decayed because not all their power and wealth could save them when cruelty and selfishness and bad government crept into them. Now that we have finished the story of the nations on the earth to-day we begin here to read the story of these fallen empires and no story in our book brings home to us more deeply the truth that the greatest power in the world lies in things we cannot see—in love and truth and hope and faith which have never once passed out of the world but without which even empires perish.

## EGYPT'S WONDERFUL STORY

WE gladly make our way to the country shaped like a lotus lily with a long stalk lying on the bosom of the hot and sandy mid world desert. For when we glance—in the story of Africa—at the country as it is to-day and its history during the last 2000 years we are reminded at every turn that a great and wonderful past lies behind those years. We cannot help seeing the stupendous work which that past has left scattered over the face of Egypt so vast are the buildings and ruins still standing on the banks of the Nile and on the edge of the desert.

And so it is that deeply interesting as we find the land to-day we cannot help feeling that the true glory and greatness of Egypt lie in distant times.

It is not easy to realize that the time of subjection to the Romans about 2000 years ago which brought our island into the light of day came to the dwellers by the Nile at the close of a grand and eventful independent history reaching back some 5000 years and more before our own history can be said to begin.

It is as difficult to understand the meaning of this vast expanse of time as it is to take in the detail of a far preading view from a mountain top. We need a strong glass to help

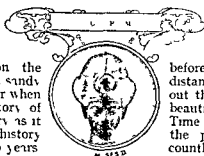
us pick out the vil-  
lages fields woods  
and streams and the  
signs of life that he

before us hidden in the blue  
distance. And so to find  
out the deep interests and  
beauties of this great view of  
Time in which he hidden  
the joys and sorrows of  
countless generations of  
human beings we must gaze

steadily and earnestly into its far haze  
using every help that comes to us to  
strengthen our sight and imagination.

The pyramids which we see upon  
page 4783 will help us. They rouse  
our curiosity as we look at modern  
Egypt and consider the fine crops and  
the share that the British have in  
governing the country and wonder  
at the Suez Canal and the great dam  
at Assuan. So let us now without  
delay mount to the top of the Great  
Pyramid as the largest of the three  
pyramids near Cairo is called.

We shall not find it an easy climb  
for it is higher than St Paul's and  
the rough blocks of stone which we  
have to use as steps are many feet  
high. But two strong Arabs in flow-  
ing white garments will push and pull  
us all the way up chattering broken  
French and English till we arrive  
breathless at the top where the point  
is now so much worn down that there  
is room for several people to stand  
and admire the wonderful view.  
There below us is the full flowing  
river which except in the bad famine



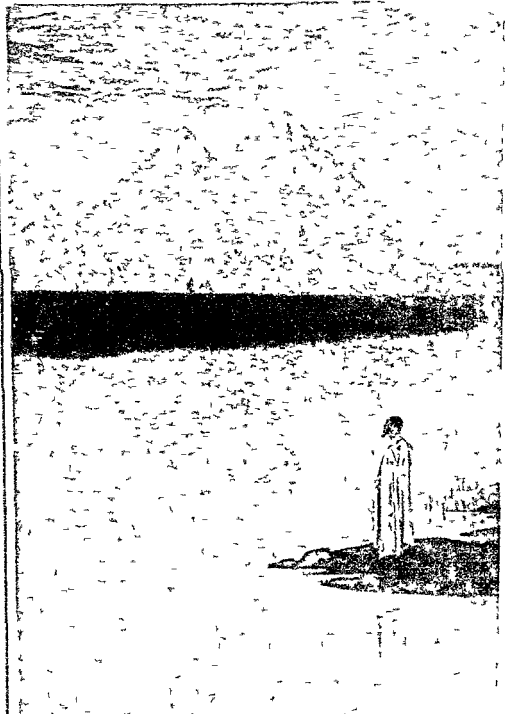
# A PHARAOH ON HIS WAY TO THE TEMPLE



The magnificent temple of the god Ammon at Karnak with its great lotus garden and its sacred lake. The Pharaoh went with all his retinue and pomp to it was possible to a scene and they proceeded to between the long avenue of sphinxes, amid the sounds of music to the portico of the temple where they were received with reverence by the onlookers for whom the Egyptian monarchs were the to whom they were expected to represent in their person the whole of the nation. Ammon was by represented as an



# THE FIRST GREAT WONDER OF THE WORLD



Of all the marvellous monuments that remain in to-day to illustrate the power and glory of the past the Pyramids of Gizeh which we see here is the most marvellous. The largest of the three known as the Great Pyramid was built by a Pharaoh named Cheops, as a tomb for himself. It is the largest of the three and is the only one of the world and was originally 480 feet high. The area covered by the pyramid is more than 13 acres.

parts of which are believed to be older than the pyramids themselves. Certain chapters of this book were always laid beside the mummies to instruct them what to say and how to behave in the under world. There is no end to the interest of the Book of the Dead not only on account of its entrancing illustrations but also for the teaching it gives about the religion of Egypt and how men tried to fit themselves in life for a happy hereafter and how they expected to be judged and how they believed they would live and work on their way through the underworld. The British Museum has a fine copy of a large number of its chapters and we can return to study it again and again finding something fresh and interesting every time.

Besides this and other religious books there are many other papyri of great age and they include fairy tales, war poems, medical and astronomical books, and also lengthy instructions as to behaviour.

Every year diggings and explorations are being carried on in the search for more temples and tombs, inscriptions and papyri to fill in the gaps in our knowledge of the story of old Egypt.

#### **A EGYPTIAN KING WHO REIGNED NEARLY SEVEN THOUSAND YEARS AGO**

Scholars are inclined to put back the beginning of that story farther and farther. The first historical king of old Egypt is put by some in the forty-fifth century before Christ. Some think that Menes who turned the course of the Nile lived much earlier. Before him there are legends of god-kings and heroes and kings of small states. Specimens of very old pottery with pictures upon it of soldiers and boats strangely like children's drawings of to-day give an idea of the first known life on the Nile long before Menes.

For the sake of convenience in dealing with the great number of kings who followed Menes we generally group them into thirty or more dynasties or families and the names are gleaned from the various lists of kings on tablets and papyrus made from time to time through the centuries which have come down to us. When looking at inscriptions we can always distinguish royal names because they are surrounded by an oval line supposed to be a

cord tied in a knot to preserve the name from contact with common ones. This oval is called a *cartouch*. Before the king's name will generally be found some Egyptian word composed of a sign like an umbrella and an i-net over two half circles. These signs mean King of the North and South for Egypt is such a long narrow country that it was long divided into two parts and so we often hear of the Double Crown which is made up of the red crown of North Egypt and the white crown of South Egypt.

#### **THE KINGS OF EGYPT WHO CALLED THE SUN THEIR FATHER**

Each king also called himself Son of Ra or the Sun which is shown by a goose and the round sun with a dot in the middle. The names of the kings are chiefly made up from about a dozen signs which we meet with continually in every inscription. It is very interesting to pick these out and learn them as we can easily do from the guide books of the British Museum.

Very little is known of the kings of the first three dynasties. It was under the rule of the fourth perhaps—some say in the thirty-seventh century before Christ—only 1000 years earlier still—that the three great pyramids near Giza are believed to have been built by Chufu by Chuf Ra and by Men-kau Ra.

If we would see the speaking features of Chuf Ra and note how he sat to give audience to the overseers and officers of his great building works we can find a cast of his wonderful lifelike portrait in the British Museum. There he sits on his throne surrounded by memorials of the officials who superintended the building of the second pyramid.

#### **THE MERCIFUL KING WHOSE BODY WAS LOST AT SEA**

Of Men-kau Ra the museum possesses part of his skeleton and the fragments of his coffin with the inscription saying he was just and merciful. The rest of the coffin and mummy were lost at sea on the way from Egypt when they had been taken from the third pyramid. It is said that the sixty-fourth chapter of the Book of the Dead was compiled in his reign.

Not far from these Pyramids of Giza is an enormous granite foun-  
tained out of the living rock with a human

# KARNAK, THE GLORY OF ANCIENT EGYPT



l t l p t w s th w de l t m l fth god Ammon at K n k  
 glory lth beend c bed at obl t flet of rht t t lmg of  
 anstl exson l ton fth nght fa m d f m ton of l anc  
 l d pl thndoorw y dth g thal t t d l l of th wra typul  
 or d so sto ppea in t t l l t  
 over p l ed by t ba d f m  
 t Egypta A enno t t on  
 ll be h lyp t d d c m re

This pillar now stands on the Thames Embankment. Thothmes III was one of the first kings of Egypt to make war across the isthmus both on the nations in the mountains of Syria and in the valley of the two great rivers beyond the desert.

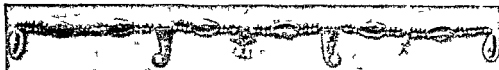
Then there was the great Queen Hatshepsut often called the Elizabeth of Egyptian history. She sent most interesting expeditions to discover unknown countries and had an account of them with fine illustrations engraved on the walls of a magnificent temple she built near Thebes. But interesting as is this strong queen who tried so much to look like a man that she had a beard added to her portraits, we must pass on to the stirring times a little later when the descendants of Jacob the children of Israel had grown to be very numerous and were graciously treated by the kings or Pharaohs as the Bible calls them of the period. Rameses II is believed to have been the great oppressor of the Israelites and we can see his face in the huge stone monuments he set up and more wonderful still, the photograph of his mummy which has been found with those of many of his race and put into the museum in Cairo.



This is one of the beautiful decorated columns of the temple at Dendera, shown on page 42. The column is such a fine specimen of the work of the temple was finished about 100 years B.C.

Thus the features into which so many looked with awe—perhaps the little Moses among them—are shown again to the world more than 3000 years after the great king's death. Magnificent were the temples and monuments set up by this dynasty of king among which we find the massive ruins at Karnak and Luxor near Thebes. Bricks such as the Israelites made for use in building store cities for their hard taskmasters necklaces and jewelry such as they may have taken when they spoiled the Egyptians are here in the museum before our eyes. As we again think over the romantic story of Moses rescued by the king's daughter and brought up in the palace itself, we find endless objects with which to frame his life from childhood onward. The toys and game especially the animal—such as a modern looking spotted cow and a cat with a movable jaw—must have pleased him and a garden with trees and a pond like on that is pictured on a wall would be delightful for a child to play in. The little Moses may well have heard music from instruments such as those pipes and harps and he must have enjoyed them and sewing with

# PICTURES OF THE PEOPLE OF OLD EGYPT



Ne k l ces were an imp riant part of th dress of the t Egyptians both me and wom n w r g th  
o nam t Here was a a cklace 3 000 y sold It is of g ld m t d with shell d p r c o s t ne

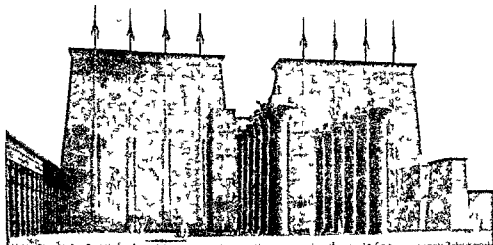


Owing to th l d of co q d t l r s t l people t Egyptian ist d f r iou race and h a w e e  
f o m sculptured pictu thousands of years old wh t o m of th a e s w like. N m b e l a d how the  
a q u l i e a g l e - n o d t y p e 3 l the Libyan 4 th A m o r t 5 th l y - h a i r e d t y p e 6 t l a h r p - n o s e d t y p e  
7 th b o t s e d t y p e 8 th f w d b e d t y p e l n d t l the t a g h t - f a c d t y p e a n d l i K l g Ch L R a

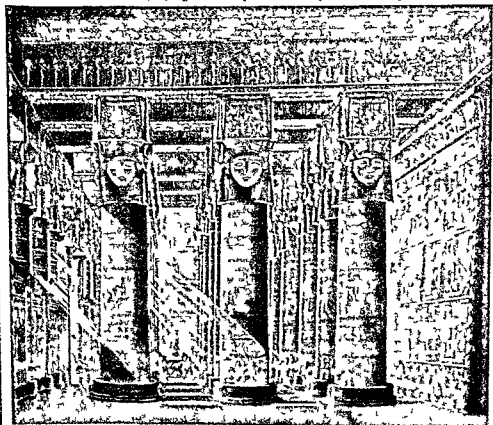


In th r t o m f i t t i n g o c h l r s t h Egyptian w e m l k m d r o E r e p a n s t h a t h people of the E t  
T h e i r t w r e n o t u l k e o o f t o d y m y b e s e n i n t h p i c t u f o m t h e b a t w t h a b c h w h i c h i s  
3, 4 t y e a r s o l d. T h e s t o o l o n t h e l i g h t f o l d s p l k m f m p l T h o t h s e t l o f e b o y a l d w h o y

# THE MIGHTY TEMPLES OF ANCIENT EGYPT



In this view we see what the Great Temple of Ammon at Karnak must have looked like by moonlight in the day of its glory. The picture shows the inside of the temple, much of which was left open to the sky owing to the dry and warm climate. The temple was 1,200 feet long and covered an area of 430,000 square feet, nearly twice the area of St. Peter's at Rome. The great central pillars of the temple are 36 feet high and 33 feet round.



Here we see another of the magnificent temples of Egypt, that of the goddess Hathor at Dendera, as it is. It is known as the temple of Hathor, a shrine for royal worship. This is not one of the most ancient buildings, being erected in the day of the Ptolemies, long after the rule of the Pharaohs had passed away. Through the massive statuary pillars which bear the faces of the goddesses at their heads, we catch a glimpse of a peaceful scene of priests.



This picture was a Palestinian galilee from his head and companion stand round a f e

## THE PERIL OF PAUL AT SEA

WE must not forget that St Paul was a man of action as well as a man of learning. He is indeed the greatest of missionaries and suffered all the privations and penalties of those brave men who set out to teach the world new truth and who count bodily fatigue and mental suffering as nothing compared with the glory of serving God.

Thrice was I beaten with rods, he narrates, once was I stoned, thrice I suffered shipwreck, a night and a day I have been in the deep, in journeyings often in perils of waters, in perils of robbers, in perils by mine own countrymen, in perils by the heathen, in perils in the city, in perils in the wilderness, in peril in the sea, in perils among false brethren, in weariness and painfulness, in watchings, often in hunger and thirst, in fastings, often in cold and nakedness.

We accept the religion of Jesus to-day as a part of life. It seems to us as natural as trees and houses. We cannot think of a civilised town without a church. We cannot imagine a Sunday without the ringing of church bells and the singing of hymns. But once upon a time there was no religion of Jesus. Once upon a time the idea that love is far

more powerful than strength, and forgiveness more beautiful than revenge, would have been laughed to scorn by all mankind. Once upon a time the revelation that God is our Father in heaven and that all men are brothers would have been deemed incredible. And to teach it in these new truths required courage of the highest kind, because these exquisite and sublime ideas attacked and destroyed by their very beauty the proud and mighty priesthood of false religions. Christianity was a revolution. It altered the whole idea of life which had prevailed in the world for centuries. Therefore, it needed revolutionaries of the bravest nature to preach it.

St Paul is the great revolutionist of his time. We make a fuss about the French Revolution, but all that period of storm and horror accomplished nothing in comparison with the work of this single apostle. It was St Paul who flung the thunderbolts of the whole civilised world into a new channel, and who gave to future generations in the most splendid and cultured that Saviour whom the hated Jews rejected. Let us think what work it was to bring Greek and Romans to the admiration of a crucified Jew, to convince them that it

# PAUL'S COURAGE ON THE BREAKING SHIP



The ship that carried Paul to Rome met a terrible voyage and winds of tempests. The ship was wrecked on the coast of Malta. It was Paul's faith and courage alone that inspired his fellow travelers with hope and prevented a panic. Here we see him, as the ship is being blown up, once again taking the centurion's command.

The picture of Paul speaking to the centurion and his crew is from the fresco in the Vatican Museums.





## THE SILENT PRINCESS

A CERTAIN king who had twelve sons was so eager to have a daughter that he consented to slay every one of the young princes if only he might have a daughter sent him in their stead.

When the queen heard of this bargain which her husband had made with the King of the Dwarfs she wept bitterly and declared that no daughter could make up to her for the loss of her handsome sons.

The youngest son finding his mother in tears one day inquired what grieved her.

Alas! answered she, the king your father has bartered your lives for the sake of a baby girl who will shortly be born. On the day she arrives you are all to be put to death.

Do not weep, replied the young man. We will go away and hide, so that our father's threat may not be fulfilled.

Before long the baby princess was born and so fair and sweet was she that she quickly won the hearts of all about the court. She was always dressed in white, and on her forehead hung a golden star as golden as the beautiful hair that fell in silken tresses about her lovely neck and shoulders.

As the years rolled by the lovely girl grew into a beautiful young woman with whom more than one prince fell deeply in love. But she would listen to none of them and was as happy as the day was long until

by chance she learned the story of the fate of her brothers. In an idle mood she had found her way to a disused lumber room and there at the bottom of an old dusty box she had come upon twelve little shirts. Carrying them to her mother she asked to whom they belonged. They are much too small to fit my father, she said.

At this the queen burst into tears and related the whole of the sad story.

Oh how cruel! exclaimed the princess when she knew all. But do not weep. I who have been the cause of so much sorrow will go in search of my poor brothers.

So with the twelve little shirts in her hands she set out. For a whole day she travelled through the wood and at dusk she met a young man who stood amazed to see so lovely a maiden in such a place unattended. He inquired if he could help her and thereupon the princess explained that she was seeking her brothers who many years before had been compelled to take refuge in the wood.

I know not even if they be still alive, said she. But it was for my sake that they left their home and I seek them in the hope that I may be able to make them each his bride. So here are the little shirts that used to wear when they were very young.

Directly his eye fell upon the shirts the young prince recognized them.

My dear little sister, he cried,

## THE DOG THAT CAME HOME AGAIN

**M**oustapha was small he was lame he was cowed and really there was not a single thing to be said in his favour. His right eye had been dreadfully damaged. His dirty woolly coat was growing grey at the ends as if aged by the sorrows and miseries of life. He was a mongrel. You might take your choice between a terrier a griffon a poodle—anything. He was a freak.

Moustapha was a little dog that lived in Havre and M. Adolphe Destroies a French writer tells this charming story about him.

One night a young fellow named Robert who had been drinking heavily was stumbling home through the dark streets to his lodging when he caught sight of poor Moustapha shivering in a place of shelter. Robert was kind hearted when he had drunk heavily he stooped down picked up the poor forlorn dog and carried him home to his attic. There he washed the dog's wound and bound it up with a piece of rag. Moustapha cowered and crouched before him. He did not dare even to lick the hand that tended him.

On the following morning when Robert woke up from his heavy sleep he was surprised to see a dog in his room—a dog with a bandaged head whose eyes were set anxiously upon his face as though hoping for a welcome. Robert recalled everything. He got up and set about frightening the animal away. At this Moustapha put on a look of such disconsolate misery that Robert's heart was touched. He gave the little dog a gentle pat and no longer disturbed himself about so trifling a matter.

In this way a strange companionship grew up between the man and dog which lasted for two years. Between the young man and the shabby mongrel there seemed little in common but the man came to be loved and the pair were really united. Moustapha's affection

was always wise and discreet. He kept a proper distance with watchful eyes. He never demanded invited or even begged a little patting. He was never tire-some.

When this companionship had lasted for two years the dog fell suddenly sick with the mange. The young man did not care about soiling his hands with such a matter. There was then no dogs hospital in Havre. He said to himself: I will drown Moustapha.

Robert waited for a dark evening and walked with the poor sick dog to the end of the pier. The sea was rough there was no moon. The waves which were full of greenish reflections whitened as they broke against the wall.

Robert fastened a stone to a noose picked up the dog roughly tied the stone to the poor little creature's neck and then flung him into the sea. Moustapha uttered neither whine nor whimper. Nothing was heard except the sound of the body striking against the rough water. The young man feeling a little ashamed leaned



ROBERT CARESSSED THE POOR DOG

over to look. As he did so a gust of wind swept his cap away. It was a cap embroidered by someone whom he loved. He looked anxiously in the water for his cap saw nothing there but the foaming crests of the waves and at last made his way home miserable and dejected on account of this loss he had sustained.

He had been an hour in bed when he heard a scratching at his door. He jumped up and went to open it.

Moustapha stood on the threshold with the cap between his teeth.

The poor dog was stained with blood the water trickling from his hair in strange colours mingled with this blood and fell upon the stones. Robert knelt down and caressed the poor dog with tears in his eyes.

Moustapha regarded his master for the first time in a very pitiful manner uttered a little sighing cry and died.

politicians. They crowded round him eyeing him from head to foot with great curiosity. The orator bustled up to him and drawing him partly aside inquired on which side he voted. Rip stared in vacant stupidity. Another short but busy little fellow pulled him by the arm and rising on tiptoe inquired in his ear whether he was Federal or Democrat.

Rip was equally at a loss to comprehend the question when a knowing self important old gentleman made his way through the crowd pushing them to the right and left with his elbows as he passed and planting himself before Van Winkle with one hand on his side the other resting on his cane

a greater austerity of brow demanded again of the unknown culprit what he came there for and whom he was seeking. The poor man humbly assured him that he meant no harm but merely came there in search of some of his neighbours who used to keep about the tavern.

Well who are they? Name them. Rip bethought himself a moment and inquired

Where's Nicholas Vedder?

There was a silence for a little while when an old man replied in a thin piping voice

Nicholas Vedder! Why he is dead and gone these eighteen years! There was a wooden tombstone in the church



A TROOP OF CHILDREN RAN AT HIS HEELS HOOTING AFTER HIM AND POINTING AT HIS BEARD

his keen eyes penetrating as it were into Rip's very soul demanded in an austere tone what brought him to the election with a gun on his shoulder and a mob at his heels and whether he meant to breed a riot in the village.

Alas gentlemen cried Rip some what dismayed I am a poor quiet man a native of the place and a loyal subject of the king God bless him!

Here a general shout burst from the bystanders. A Tory! A Tory! A spy! A refugee! Hustle him! Away with him! It was with great difficulty that the self important man restored order and having assumed

yard that used to tell all about him but that's rotten and gone too.

Where's Brom Dutcher?

Oh he went off to the army in the beginning of the war! Some say he was killed at the storming of Stony Point others say he was drowned in a squall at the foot of Antony's Nose. I don't know—he never came back again.

Where's Van Bummel the school master?

He went off to the wars too—was a great militia general and is now in Congress.

Rip's heart did wry at hearing of these sad changes in his home and friend and finding himself thus alone in the world. Every answer puzzled



RIP MADE FRIENDS AMONG THE RISING GENERATION WITH WHOM HE SOON GREW INTO FAVOUR

I am your father! cried he Young Rip Van Winkle once—old Rip Van Winkle now! Does nobody know poor Rip Van Winkle?

All stood amazed until an old woman tottering out from among the crowd put her hand to her brow and peering under it in his face for a moment exclaimed

Sure enough it is Rip Van Winkle it is himself! Welcome home again old neighbour! Why where have you been these twenty long years?

Rip's story was soon told for the whole twenty years had been to him but as one night The neighbours stared when they heard it some were seen to wink at each other and put their tongues in their cheeks

It was determined however to take the opinion of old Peter Vanderdonk who was seen slowly advancing up the road He was a descendant of the historian of that name who wrote one of the earliest accounts of the province

Peter was the most ancient inhabitant of the village and well versed in all the wonderful events and traditions of the neighbourhood He recollected Rip at once and corroborated his story in the most satisfactory manner He assured the company that it was a fact handed down from his ancestor the historian that the Catskill Mountains had always been haunted by strange beings that it was affirmed that the great Henry Hudson the first discoverer of the river and country kept a kind of vigil there every twenty years with his crew of the ship Half moon being

permitted in this way to revisit the scenes of his enterprise and keep a guardian eye upon the river and the great city called by his name and that his father had once seen them in their old Dutch dresses playing at ninepins in a hollow of the mountain

To make a long story short the company broke up and returned to the more important concerns of the election Rip's daughter took him home to live with her She had a snug well furnished house and a stout cheery farmer for her husband whom Rip recollected for one of the urchins that used to climb upon his back As to Rip's son and heir who was the image of himself seen leaning against the tree he was employed to work on the farm but evinced a hereditary disposition to attend to anything else but his business

Rip now resumed his old walks and habits He soon found many of his former cronies though all rather the worse for the wear and tear of time and preferred making friends among the rising generation with whom he soon grew into great favour

Having nothing to do at home and being arrived at that happy age when a man can be idle with impunity he took his place once more on the bench at the inn door and was revered as one of the patriarchs of the village and a chronicle of the old times before the war

He used to tell his story to every stranger that arrived at Mr Doobittle's hotel the old Dutch inhabitants almost universally gave it full credit

## THE STAG IN THE OX STALL

A STAG being hard pressed by hounds took refuge in an ox stall. One of the oxen asked him why he had fled into such a place, where he was sure to be killed.

'Ah,' said the stag, 'if you will let me conceal myself I will be off again at the first opportunity.'

The oxen agreed, and the stag stayed there until evening approached. Many of the farm labourers came in with bundles of fodder, but did not see him. The stag was beginning to thank the oxen, but one of them said:

'We should all be glad for you to escape, but our master has not yet been here, and nothing escapes his eyes.'

Shortly after the farmer himself came to look at his men and feed the cattle. He happened to look down and saw the stag's horns sticking out.



of the straw. He immediately raised a hue-and-cry, and killed the poor stag.

*Nobody looks after a man's affairs so well as he does himself.*

## THE CAT, THE EAGLE AND THE SOW

HIGH among the branches of an old oak tree an eagle was rearing her young. A cat and her kittens dwelt in a hole in the middle, and a sow with her little pigs sheltered in a hollow at the bottom of the tree. One day the cat climbed up to the eagle and said:

'My good neighbour, we are in great danger. That dirty sow below is digging at the roots of this tree, so that she can overthrow it and get at our young ones. You must do as you please, but I for my part intend to stay at home and watch what she does.'

The eagle was very frightened, and the cat then left her and visited the sow.

'I hope, neighbour,' she said, 'that I do not intend to go abroad to day.'

'Why not?' asked the sow.

Oh, replied the sly cat, 'I overheard the eagle promise her young, a fine fat little pig for dinner the first time she saw you go out! I must hurry home for she may fancy one of my kittens.'



From that time the cat always went out for food by night, so that the eagle and the sow should think that she kept careful watch. Accordingly they too kept at home. The result was that their young were all starved and became a prey to the cat and her kittens.

*Beware of mischief makers.*

## THE MAN AND HIS NEGRO SERVANT

ONE day a man engaged a negro servant. It was the first time that he had ever seen one, and he thought that the black colour of his skin was due to his failure to keep himself clean.

Put him into a tub, he said to his other servants, and scrub him well until he is clean and white again.



His servants set to work. They scrubbed and scrubbed, they washed and scoured, but all to no purpose. At last the negro caught a cold and died.

*Many people attempt to do quite impossible tasks through ignorance.*

## WHAT THIS STORY TELLS US

WE know the great difference between seeing and perceiving and we must now consider the memory without which there could be no real perceiving. It is just because memory makes perceiving and even higher things possible that its importance is so tremendous. If we could not remember we should be nothing. Without memory there would be no recognising, there would be no learning, no knowing. We are so accustomed to use this power of memory that until we think we cannot realise what we should be without it. We see something coming along a road far away and then after a while we perceive that it is a human being. Later by the dress we can tell that it is a man and not a woman, but who it is we cannot tell. Finally we find that it is someone we know. Here we see that the memory acts even in the simplest kinds of perceiving and that it is worth while to devote some time to the study of it.

## HOW TO REMEMBER

NOWADAYS in dealing with such a great question as that of memory we do not make the absurd mistake of trying to understand our memories without studying every kind of memory wherever we can find it and the first great discovery we make is that in some degree or other memory is a property of every kind of living creature. Formerly it was said that memory was a property of every kind of nerve and nerve cell and that is perfectly true but it is not the whole truth.

During late years men have studied the behaviour of humble forms of plants and of animals so simple and lowly that no nerves or nerve cells are as yet developed in them. Yet even here almost at the beginnings of life long before there is the least shadow of hint of even the simplest kind of brain we find some proofs of memory.

All living matter is called protoplasm and it is a fact that memory is a property of all living protoplasm everywhere. No matter how simple creatures are we find that their behaviour can be made to change by changing their surroundings. This means that in some degree they remember, they act differently because something has occurred perhaps three times before and the fourth time it occurs they do not



behave exactly as they did the first time. What it is in living matter whether of a nerve cell or of any other kind of cell that enables it to remember we cannot say, neither can we say in which

cases of memory as when we remember an idea. But even in the humblest cases of memory is where an animal behaves differently towards light because it is the second time and not the first time it has seen it we can only guess what happens. The light the first time somehow made some kind of mark as we might say in the living cells and altered them so that the next time the light came they were different.

It is supposed by many people that living matter never forgets. When we say we forget what we mean is imply that we cannot recall. But the thing we say we forget is still there in our mind and when someone names it we recognise it. If we had really forgotten we should not recognise it.

But even where we cannot recall a thing for ourselves and where we cannot recognise it when it is recalled for us by somebody else it by no means follows that we have really forgotten. There are many cases on record where a man appears to have utterly forgotten for ten or in some certain words of some language

because it largely means giving us opportunities for remembering. But that is an absolutely different thing from any effect in actually improving the power to remember so far as this first part of memory is concerned.

#### THE ONLY EXCUSE FOR LEARNING A THING BY HEART

The differences between people in this respect are enormous but they are natural differences and we simply have to accept them as they are. Of course they make a tremendous difference in our lives because we have seen that memory is the basis of everything else and though different kinds of memory are needed for different people—as for instance the painter the engineer and the musician—yet these differences in memory are the beginnings at any rate of the differences in what the people achieve.

It is quite certain then that the brain's natural power of being impressed cannot be increased by any of the methods which have been too long adopted for that purpose. There may be a good reason for learning by heart simply because there are things which it is well to have in the mind and which can be made to stick by repetition. But no kind of learning by heart increases the brain's power of retaining things. Learning by heart does not train the memory it very often disgusts the mind and discourages it from thinking.

The only possible defence for learning anything by heart is that the thing is worth knowing. There are plenty of such things and the time will come when we shall carefully take children at just those ages when learning by heart is easiest and deliberately use those years to put into their minds the best possible selection we can make of the things which everyone ought to know.

#### THE THINGS THAT WE MUST KNOW AND THE THINGS THAT WE SHOULD KNOW

There are things that people must know and there are things that they should know if possible. The number of these things is a million times greater than could be remembered by the wisest and most learned man that ever lived. We must therefore do our best for each child and that best will mean the careful selection of the things it should learn and the using of the time when remembering is easiest. We must break up

and vary the lessons so as to avoid fatigue because when fatigue begins memory ends. Though education cannot improve the natural memory yet there are certain things which education in the widest sense of the word can do or fail to do. Whatever the brain is meant to be by nature and whatever in its power to become yet the building and the health of its cells and nerves and therefore the success of their duties depend upon the supply of blood they receive and upon their never being subjected to over use.

What we called education which is sometimes just the opposite of real education very often means that we injure the brain and spoil the memory at the very time when we think we are training it. School hours are often too long no child should attend to one thing for so long as an hour or anything like it. Light and especially air may be defective. Foul air means foul blood everywhere and always and foul blood means that the brain also is being fouled and poisoned.

#### A HEALTHY OUTDOOR LIFE IS THE BEST AID TO MEMORY

Our greatest business therefore in taking care of our memories when we are young is to lead healthy lives a much in the open air as possible and no doubt we shall find that in after years for every one thing we remember that happened indoors when we were children we shall remember two things that happened out of doors.

Now we must study the laws of the mind as far as possible in order to see whether there are any laws which will help us to get the most into the mind with the least trouble. We know that the memory is at its best in youth so that on this account if for no other reason youth is the time to learn and we have also noticed that as a rule for each boy and girl there comes at some time or other a period of a few years during which learning by heart is particularly easy. Many grown up people of to-day are grateful to those who taught them at this age when these parts of the Bible and good poetry which are precious possessions of their minds for the rest of their lives.

Next we have to consider the various special methods of improving the memory. The first of these is the method of repetition. We shall now



A cotton plantation in the Southern States of America showing the grower picking at work

## A REEL OF COTTON

THAT little piece of cotton which we snip off the reel and thread through the eye of the needle is a product of one of the greatest industries in the world.

We must look for it first in the fields of America or Egypt where it grows a plant like the mallow or the hollyhock, both of which are related to the cotton plant. The seeds are set in February and March and in ten days the green bolls are up. Before the middle of June the plants are well grown and covered with showy yellow or purple flowers. These quickly fall and in their place grows the fruit which contains the seed. Round the seed are innumerable downy filaments or wool. We have to separate this wool from the seeds and then we have the cotton in its first stage.

Now the task of separating the cotton was once all done by hand and as the man who worked at it could only produce a few pounds of cotton a day from the seed it was not profitable for the growers unless they had slave or workpeople whose wages came to little more than the cost of keeping slaves. But when Eli Whitney invented his cotton gin a machine which tears the cotton away from the seed each baw was



able to separate very nearly a thousand pounds of cotton from the seed in a day. When the cotton has been obtained from the seed it is lumped together and packed tight by a machine into bales weighing about 500 pounds. The bulk of it is used for making calico and similar materials.

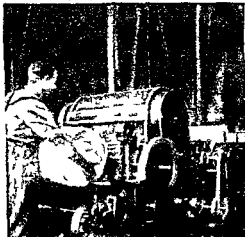
The cotton which is on our reel is difficult to make. It requires three or four times as much manufacturing as the cotton used for calico. When the little strands of cotton have been spun into yarn two or three yarns have to be taken and twisted together. This is double thread and wound upon bobbins.

Next it is twisted into what is called a two ply thread and again wound on bobbins to give the new formation a second twist. Then this thread is run through a machine which gives it a third twist and so makes three ply thread into one thread of six-fold thread. In this state the thread is wound one more on to bobbins—big ones this time—and from these is reeled into hanks so that it can be bleached or dyed. Again it is wound back on to bobbins—big bobbins—from which it is at last wound off on to small reels such as we have in the shop.

The next time you thread your needle



# WINDING THE COTTON ON TO BOBBINS



Here we see the cotton coming out of the opener which it has been cleaned and prepared for spinning. It is rolled into a large heap of snowy whiteness.

The cotton is then passed through another machine called a scutcher and is still further cleaned and rolled out. The two different machines beat the cotton.



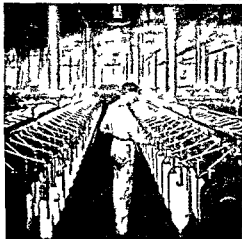
From the scutcher the cotton goes to the drawing machine coming out as a large rope or strand, called a sliver. This same comes from an Anglo-Saxon word meaning to clean or to draw out. It is now ready for work.



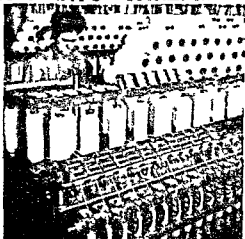
Several slivers are now put together and passed through the drawing machine which makes all the slivers uniform in thickness and the fibres more parallel.

The next process is "spinning." The strand of cotton is put out of the cylinders in which they are coiled, goes through the drawing machine, and are wound on to bobbins.

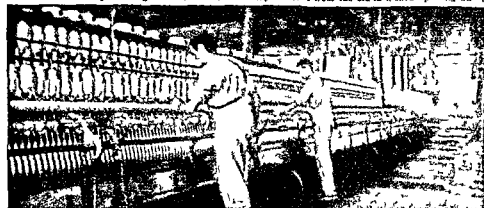
# TWISTING THE FIBRE INTO THREAD



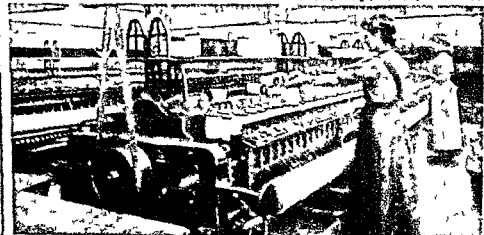
It is in spinning that the cotton fibre is given its strength for the making of yarn and here we see the spindles at work the yarn being wound on to bobbins.



After the process of the bobbins at the spinning machine. This laborious contrivance is very different from the old fashioned spinning wheel.

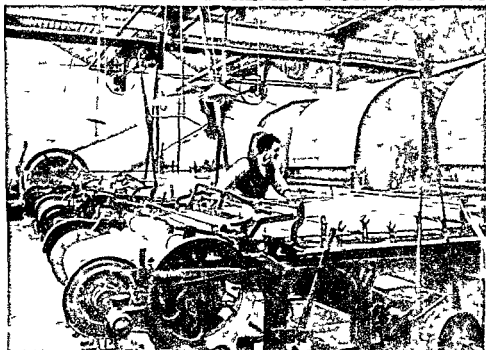


There are two kinds of spinning-machines known as the ring-spinner and the mule. Here we see a mule taking the strand of cotton fibre from the bobbins at the back and twisting them into yarn or thread.

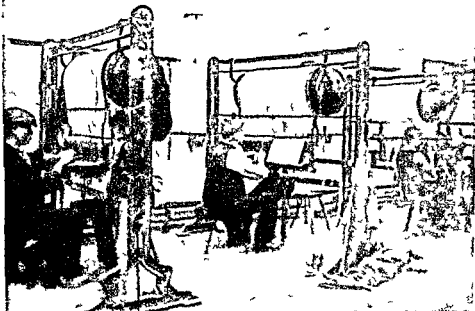


The thread, or yarn, is wound into spools upon the spindles of the mule and these spools of yarn are then taken by girls, who are known as cotton weavers, and the thread is wound upon bobbins by machinery.

# PREPARING THE THREADS FOR WEAVING

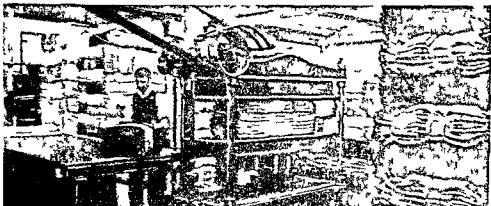


The warp-threads pass on the sizing-machine through the rollers and are dried by steam. These cylinders are seen on the right of this picture. Sometimes they are heated by hot-air chambers and used for drying the sized warp which as it dries is wound on to the reels.



The great rolls of warp which are called beams are then taken to workmen known as driers, who pass down the threads, and pass the ends through the sizing and guiding apparatus, ready for the weaving loom.

# A PIECE OF CLOTH READY FOR USE

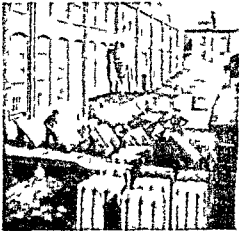


After the cloth has been woven and found perfect they are packed in bales and placed in the warehouse to await shipment.



In some factories the roll of cloth are finished before being sent to the loom in a factory in which they are woven.

After the cloth is finished it is packed in bales and shipped to the warehouse.



It is at this point that the cloth is sent to the warehouse to await shipment.

It is at this point that the cloth is sent to the warehouse to await shipment.



The Giants Causeway in Ireland, showing the curious pillar-like form of the basalt rock

## IS A STONE ALIVE?

THE answer to this tremendous question depends on what we mean by alive. Animals and plants do certain things which no stones or rocks do. Stones take curious and regular forms as in crystals and in the columns of the Giant's Causeway in Ireland shown in the picture on this page. Crystals grow and sometimes it looks as if little crystals grew from them but they do not breathe and they have not certain other powers which even the simplest and humblest of living things possess. So we must say that in the strictest sense of the word stones are not alive.

But that is very far indeed from being the whole answer to the question. It is a proved fact that the substance of which stones are made can help to build up the bodies of living creatures and these bodies can be broken down into similar chemical and made into stones. This seems very curious but it is true.

Silicon is the name of the commonest element in rocks and stones and sand and clay and we find that it helps to form the living body as in the case of wheat the straw of which always contains some amount of silicon. What is true of stones and silicon is true of many other kinds of dead matter



as it is used foolishly to be called by people who thought they exalted themselves by deifying matter which is verily the mother of life. All living things are made of dead matter so-called and of nothing else and their life absolutely depends upon the intake of dead matter—air and food—from moment to moment. We can only conclude not less certainly the more we study rocks and stones and trees that there is one great Power that can express itself in the making and the history of atoms in rock and plant and animal and man—the Power whose dwelling is in the light of setting sun and the round ocean and the living air and in the mind of man.

DID THE EARTH GO ROUND FASTER BEFORE IT COOLED DOWN?

This is not a question which any one can answer very positively for of course none of us were there to see how the earth behaved before it cooled down. Yet there are very powerful arguments which suggest that the pace at which the earth spins must now be getting gradually but certainly slower and that of course means that long ago it went round much faster than it does now. What we call a day is, of course, the time it takes the

the nerves from the eye might run to the hearing centre of the brain and the nerves from the ear to the vision centre or we might imagine that when we went to a concert we should see the music and hear the movements of the conductor and the players. This is simply another way of saying that what we call light and sound are the consequences of the behaviour of those parts of our brain which correspond to them.

It is extremely interesting that in some people there are what are called *associated sensations*. In these cases when one part of the brain is excited as by a sound another part—the part that sees—is excited also. In such cases we may say that a sound gives a light. Such people when they hear the sound of a trombone will at the same time see a crimson colour or when they hear the sound of another kind of musical instrument they may see a blue colour. These cases seem very extraordinary but they really do happen.

#### WHY DOES CELLULOSE CATCH FIRE SO EASILY?

Paper catches fire easily because it is made from vegetable substances which contain large quantities of carbon and hydrogen and not very much oxygen. So when it is made hot by a match or some such means, the carbon and hydrogen of the paper combine with the oxygen of the air and the paper burns.

Now cellulose is made from paper by the use of strong acids that turn the paper into a new compound which has very convenient properties. When hot it softens and can then be moulded into various forms which it retains when cooled. Cellulose has very much the same composition as paper though it differs in some respects and it burns for the same reason as paper does.

The material that makes the hard part of plants and from which paper is made is called cellulose and it belongs to the same class of substances as starch and sugar. A certain quantity of cellulose is practically cellulose combined with a proportion of nitric acid.

#### WHY DOES A MATCH FLARE UP WHEN TURNED UPSIDE DOWN?

We can find the key to this question if we remember what happens when a match is burning. It is burning because

the wood and the other materials in the match—or the wax if it is a wax match—are combining with the oxygen of the air and it will go on doing this as long as there is sufficient material to burn. In the case of a wooden match held upright the flame is sometimes apt to go out because it is starved of fuel.

This is less liable to happen in the case of a wax match because the burnable part of a wax match is largely made of materials which are what we call *volatile*. This means that they turn into gases and rise up when they are heated. But in a wooden match there is not nearly so much of this material and so it is apt to go out but if we turn it upside down then the flame finds an abundance of material on which to feed.

The same is true as we know of burning paper and this is natural enough because paper and wood are made of the same material which belongs to the same class of chemical substances as sugar and starch. Unlike the materials that make a wax match very few of these substances are volatile. DOES THE SUN NEVER SHINE IN THE NORTH?

The sun does sometimes shine in the north. It all depends upon the place from which we are looking at it. It is the northern half of the world that most of us who read this book live in and it is the northern half of the world that has made the whole of the records of civilisation. Thus the sun has always been known to shine in the south.

Long ages ago when men voyaged south of the equator and rounded Africa they reported that on their journey they found the sun shining in the north. This was utterly ridiculous when they came home even by the greatest writers of the time. But we now recognise that this is one of what these travellers saw is very good evidence that they did what they said they had done.

Whatever part of the world we are in the sun always rises in the east and sets in the west because the whole earth is of one spinning in the same direction and it is that spin that makes the sun appear to rise and set. But if we are looking at the sun from the northern half of the planet it appears to travel across the sky in the south when if we

and dip it into water we shall find that without our sucking the tube the water runs up inside it to a higher level than outside and the more hair like the tube the higher the water will run.

Other fluids however will not be hove in the same way as water. Mercury for instance will be pressed down by the tube and will stand at a lower level inside it than outside. All we can say is that the surface of the water catches on to the side of the tube and creeps up it a little way.

Now a sponge or a lump of sugar is really a very complicated system of little irregular tubes and water behaves with regard to them just as it does with regard to a simple single glass tube. On the other hand mercury will not run up at all either into a lump of sugar or into a sponge. The rising of the water in the tube or the sugar or the sponge has nothing whatever to do with the atmospheric pressure and is therefore quite a different matter from its rising in a tube when the end of the tube is sucked by anyone.

**WHY DOES A LIQUID RUN UP A TUBE WHEN WE SUCK IT?**

We know very well that something we do makes the liquid run up the tube for it stops doing so when we stop sucking though if we seal the top of the tube with the tongue the liquid will not fall back. Now when we feel that we are sucking the liquid up we are apt to suppose that we are pulling the liquid up the tube but this is not at all what is happening. Though it looks as if the liquid were being pulled or dragged up by something it is really being pushed and what pushes it is the air.

When we suck liquid up a tube we are lessening the pressure of the air inside the tube and the pressure of the air on the surface of the liquid we are sucking squeezes it at once up into the tube where we have made room for it to go. We make the room and the air pushes the liquid into it. I very kindly sucking, or suction to use the proper word is of the same kind. What seems like pulling is simply clearing the way so that whatever is behind can be pushed. If the air is thick and heavy it presses harder than if it is thin and light. So in different states of the air which usually mean different states of the weather the height of the column of

any particular liquid that the air will push up a tube varies. More liquid will be pushed up when the air outside is heavy and less when it is light. So if we make a tube and seal the top of it we have an instrument that will measure the pressure of the air from time to time and we call this a barometer.

**WHY DOES WATER FREEZE?**

Thus sound quite a simple question but indeed no one can answer it yet. We do not know why taking heat out of water should at last turn it from the liquid into the solid state. It is believed however that we are wrong in supposing that there is a perfectly sharp line between the liquid and the solid state of water or of anything else. It is probable that water turns into ice or ice into water through unbroken stages. Only in most cases and certainly in that of water these happen so quickly that we have not time to notice them. In other cases as in that of ealing wax no one can say where the solid state ends and the liquid state begins.

If we are ever to learn why water freezes we must certainly discover all we can about the nature of ice and it is not difficult to find in the first place that all ice is made up of crystals. So we must understand crystals and the reason why so many kind of matter when solid form themselves in crystals.

This is a most difficult subject to study but the laws of crystals are being very slowly worked out and when that is done perhaps we shall be able to say why it is that water freezes when it is cooled although we cannot do so now.

**WHY DOES ICE TURN INTO A LIQUID WHEN IT IS HEATED?**

This question is perhaps really the same as the last yet in a way it is easier for us to understand why ice turns liquid when heated than why water turns solid when cooled. We have a good working idea of what heat is. We look on it as a movement of the atoms and molecules of which matter is composed. Cold we know is simply the absence of heat. So we can understand why solids especially a crystalline solid like ice turn liquid when heated because we can imagine the particles of them beginning to move to and fro so rapidly that they can no longer hold together in the regular way required to make the crystals of a solid substance.

sea water. Also for a certain distance up the river varying very much in different cases the height of the river will rise and fall with the tides. We can see this for instance in the dock upon the river of any great port.

But a river consists of moving water and the motion of the water has power to rub away from the bed and from the banks of the river a large quantity of solid material which is not melted or dissolved in the river water but is carried down by it. Now when the river water meets the sea its pace slackens because it is opposed by the weight of the sea water. Therefore the solid matter held in the river water is apt to sink and form a great wide bed or bank of mud. When as in the case of the Nile there are two or more main branches the deposit enclosed by these and the sea takes the form of a triangle. Deltas are nearly always found at the mouths of those rivers flowing into lakes or enclosed seas or sheltered gulf because there is in all these cases an absence of opposing currents.

#### WHY ARE SOME THINGS GOOD FOR GROWN UPS AND NOT FOR CHILDREN?

Perhaps the real truth of the matter is that grown up people and children do not differ from each other so much after all and the things which are really bad for children are not very good for grown up people but it is certainly true that things which would injure children very much may not hurt grown up people.

There are three reasons for this. One is that as children have very small bodies it naturally takes a much less quantity of harmful things to hurt them. Another reason is that the body has great power of learning to protect itself against harmful things and so in many cases grown up people are able to take these things, such as tobacco or alcohol without injury not because they are grown up but because their bodies have learnt how to do so. Even a grown up person taking tobacco for the first time is apt to suffer severely.

But the third reason is the most important. It is true of all kinds of living beings that there are more easily injured when they are developing. We can understand in a way how this must be for developing is a very much more delicate and difficult process

surely than merely continuing in the same state which is all that the grown up body has to do and so we may expect that the developing body must be more delicate seeing that it has only one way of going right and that there are so many ways of going wrong. Only those who have studied development can understand how grave is the effect of poisons like alcohol and tobacco upon the developing body of a child.

#### WHY DOES A BOY'S VOICE BREAK AND NOT A GIRL'S?

When a boy's voice breaks it is because his voice box is suddenly becoming rather larger. As a girl grows up to be a woman her voice box grows steadily in proportion to the rest of her body. But for some reason Nature prefers that men shall have much deeper and louder voices than women. In order that this shall be so the larynx or voice box must be much larger in proportion and the vocal cords longer in men than in women.

This special change begins to happen when a boy is about fourteen or fifteen years of age. It is not really necessary for a boy's voice to break—that is to say it is possible for his voice to get steadily and evenly lower. But as a rule this does not happen and the reason is not that there is anything the matter with the boy's voice box but simply that he has not learnt how to work it.

The muscles are getting bigger and heavier the cords are getting longer and this is happening very quickly and of course it must mean that a new skill has to be acquired just as if one had learnt to play perfectly on a very small violin and then had to play on a full sized one. That is why the boy has not the proper control over his voice and sometimes speaks in a low pitch and then suddenly in a high one. **WHY DOES A STICK MAKE A NOISE WHEN SWUNG IN THE AIR?**

All kinds of noises however different from each other and all kinds of musical notes high or low round or thin are really of the same nature in the sense that they all consist of waves of a certain kind produced in the air as a rule though they may be produced also in solids or in liquids. These sound waves are of a special kind and





## THE FLOOD AT LINTON FALLS

SWOLN to twice its usual size by long continued rains the River Wharfe raced between its banks with a noise like thunder. At Skipton it was no longer a peaceful river but a wild torrent—grand indeed majestic in appearance perilous to a degree to any who might come within the sweep of its impetuous course.

Heedless of all but play two little boys were amusing themselves on the bank. Occasionally their laughter would rend the air as they tumbled about one on top of the other. Then they would pick themselves up and off they would go again.

Suddenly one of them a child only five years of age slipped and fell into the torrent. In a moment he was swept away and carried down stream with great swiftness.

The screams of his companion attracted the attention of Kate Verity, a girl in a mill close by. Throwing down the book she was reading she rushed out to see what was the matter. A glance was sufficient to tell her all. With amazing quickness she decided what was best to be done. To have plunged into the river there and then was useless for by this time Eric was well past the point that had elapsed the child had been carried a hundred yards down the stream. Promptly the plucky girl set off running down the bank in pursuit.

Barely thirty feet above the terrible Linton Falls she came level with him. A few yards more and nothing could save the boy from being carried into the white tumbling foam and dashed to pieces on the sharp rock below.

The girl did not hesitate for an instant. Into the rapid current she plunged as shown in the picture above and caught the boy as he came sweeping downward. Then followed a tremendous struggle. The force of the water seemed irresistible.

The girl however knew well what she was about. Throwing the child across her shoulder she struck out. The current held her and for a while she made no headway. But there was no hurry now for not once did the steady strong sweep of her stroke give way to haste or excitement. Slowly inch by inch as it seemed she forced her way towards the bank. More than once she was carried against a rock and her destruction seemed imminent but she came through without mishap and was soon near enough to the bank to be dragged out of the water. Leading a dismal wretch still clutching the rescued boy.

For this gallant act which so fortunately resulted in a successful rescue the brave Yorkshire lass Kate Verity was awarded the bronze medal of the Royal Humane Society.

change his wilful conduct and set a good example to those who would one day be his own subjects

And now he concluded because you are guilty of disobedience and contempt of this court I commit you to the king's Bench Prison There you will stay until the king's your father's pleasure is declared

The hot tempered prince acknowledged the justice of the judge's word and laying his sword down bowed to the courageous man who had sentenced him and was then taken off to prison It is said that when the king heard of what had occurred he expressed his happy fortune in having for one of his judges a man who was not afraid to administer justice and for a son a youth willing to submit to it

Shakespeare who wrote a great deal about Prince Henry in his plays make the king his father say these words

Happy am I that have a man so bold  
That dres do justice on my proper son  
And not less happy having such a son  
That would deliver up his greatness so  
Into the hand of justice

Prince Henry afterwards treated Judge Cascoigne with much respect recognising that if he could keep so strictly to enforcing the laws of the country even against the heir to the throne who in the natural course of events would one day be his sovereign then he would not regard the favour of any man but seek to do his duty to all

When Prince Henry did come to the throne he justified the people's trust in him and Judge Cascoigne was one of the upright men he consulted Shakespeare puts these words into the mouth of Henry V when addressing the judge

Still bear the balance and the sword  
And I do wish your honours may increase  
Till you do live to see a son of mine  
Obey you and obey your law

## THE BRAVE SCHOOLGIRL OF DORSET

THE deeds of many humble heroes and heroines are quite unknown but they are all worthy of record Julia Hatcher a schoolgirl lived at Moor sid a lonely spot near Blandford Dorset One day while she was at work in her house she was startled by the sound of screaming

Going to the door she was horrified to see a huge bull tossing a boy in a field on the other side of the road Again and again the infuriated animal rushed at the prostrate figure lifted him on its terrible horns and threw him backwards high into the air so that he fell heavily to the earth

The lad's death seemed but a question of moment realising this Julia Hatcher rushed out to save him It was a perilous errand and one which seemed certain to prove fatal for the furious bull was in no mood to permit interference

But the girl's presence of mind was equal to the occasion She remembered that bulls always shut their eyes when stoned so as she hurried along she picked up the likely stones that lay directly in her path

The moment she got within range she flung to and fro the bull Every stone did not take effect but many were well of the mark They served well even to divert the animal's attention

from the boy—which after all was the main object All the while she kept advancing till she got so near that it was impossible for her to miss her mark

The bull resented these attentions and several times he charged with lowered head The girl took her ground undaunted meeting each fresh rush with a well sustained blow of stones

At length the bull paused glared about him for a moment and then turned tail Prompt to improve her advantage Julia followed pelting him vigorously till he took him off

The courageous girl now turned her attention to the boy who was by this time unconscious He looked in a terrible condition His clothes were torn to rags and he was frightfully bruised and lacerated Fortunately his bones were broken After a great deal of trouble she restored him to consciousness Eventually he recovered from the ill effect of that terrible day and quite regained his health

Had she not acted so courageously and promptly and had she not remembered that bulls close their eyes when stones are thrown at them there is no doubt that the boy would have lost his life For the brave girl in her career a bull she was awarded a bronze medal The next to all a book see on page 4657



## FLOWERS OF THE MOUNTAINS

MANY boys and girls are fortunate enough to live at the foot of some mountain or other some may even dwell in lonely farm houses upon the slopes. These children have splendid chances for the study of wild flowers for not only do the mountains provide many kinds such as we cannot find growing wild anywhere in the lowlands, but many of the lowland plants will also grow on the mountain side.

But one of the lowland plants will not grow at a greater height than a thousand feet above sea level some mountain plants will not grow upon soil less than two thousand feet high and so on. On the other hand we may find some lowland plants growing at various heights. The hard fern which is found from Shetland to Jersey occurs at all levels up to four thousand feet at which height it may be found in the Scottish Highland.

The saxifrages are a family of mountain plants of which several are grown in our rock gardens on account of their neat foliage and pretty flowers. London pride is the best known of these but that we can find in the wild state only in the west and south west of Ireland.

Mossy saxifrage is another garden plant which may be found wild as far south as the hills of Scimitar. The purple saxifrage grows in

spring. Its perennial stems trail along among the mosses and send up short annual flowering shoots covered with four rows of small oval leaves and ending in a single erect purple flower. The other alpine saxifrages — true mountain flowers are known as alpinines — all bloom in summer.

The clustered saxifrage has a rosette of rather leathery spoon-shaped leaves which are red on the lower side. Its flowers are clustered in a compact head and have white petals and a purplish calyx. This is not found growing at lower levels than two thousand feet above the sea but extends to more than two thousand feet higher. The yellow mountain saxifrage grows about the rock till that comes down the mountain sides where its narrow oblong leaves form large green cushions a foot across. The flowering stems stand well above the cushions and bear a number of scattered flowers whose yellow petals are dotted with red. The petals stand wide apart and the space is partly filled by the green sepal upon each of which lies a golden stamen.

The great butterwort is one of our wet-peat bog plants. We may find it rarely in lowland bogs but it is properly an alpine plant growing freely up the mountain sides to a arctic



THE GLOBE FLOWER

This large and handsome plant belongs to the buttercup family. It flowers a pale yellow and grows into the form of a globe flower from which the plant receives its name. It is sometimes called the gowan.



THE YELLOW PANSY

The pansy is a flower which grows in a variety of colors, but the yellow pansy is the most common. It is a small plant with a yellow flower which is very common in the garden.



THE COMMON SCUMVY-GRASS

The scumvy-grass is a small plant, but a member of the large family. It is a small plant with white flowers and grows in a muddy sea-shore, but it is also frequently found on lofty moorland.



THE MOSS CAMPION

This is a small, mossy plant, with the pink and white flowers and the thick, fleshy leaves, growing on the summit of our highest mountain, where it is a gray touch of colour. In Ireland it is found only in Donegal.



THE LADY'S MANTLE

Several plants bear this name of which the common lady's mantle shown here that grows in moist, hilly pastures is most frequently found. Alpine lady's mantle growing only on mountains, is not common.



THE BILBERRY

The bilberry is a plant of many names, whortleberry, whinberry, and myrtle berry being most familiar. The leaves are grassy, and the flowers are blue-colored. It is best to be found in all damp places.



THE SEA PINK

The sea-pink, or thrift, is found on seashores and the tops of mountains. The fleshy leaves grow in dense tufts, and the rose-colored flowers are round. It is at the ends of the stalk. It is often grown in gardens.



THE ROSE-ROOT

The rose-root is found only in the mountains of the North and is a relative of the sloe-rose. The flowers grow in dense tufts at the ends of the stems and are usually yellow in color.

# CARLYLE, THE MAN WHO DIGNIFIED WORK



Few thinkers have influenced their age more than did Thomas Carlyle, the rugged Scot who roared at the world and denounced hypocrisy. He preached the gospel of work, and some people thought he confounded might with right, but Carlyle always declared that this was the very opposite of his teaching. Here we see the aged "Sage of Chelsea," as Carlyle is often called, walking on the Thames Embankment near his home.

The photograph of Mazzini on page 4345 was taken by J. Mott and Fry.



whole effect of this little establishment an air of cleanness, peace, and simplicity which was delightful "

Two swallows built their nest in Rousseau's bedroom, and there hatched out their brood

"I was no more than a door-keeper for them," he said, "for I kept opening the window for them every moment "

They used to keep on flying round about his head with a great stir until he had fulfilled this humble duty

#### ROUSSEAU, THE STRANGE, BAD MAN WHO WAS GOOD TO THE POOR

Now, you will think that Dr Johnson exaggerated when he said that Rousseau ought to be transported But the truth is that Rousseau is one of those strange men about whom it is possible to hold two opinions, and those the most contradictory Lord Morley, in his great book on Rousseau, quoted a verse of Victor Hugo's, which likens the soul of a man to a pool, in the still water is mirrored the sky tinged with heaven's fire, and beneath is the loathsome slime, where black and shadowy reptiles creep dimly through the dark Such was Rousseau's soul

Rousseau was an angel of light to the poor He saw a world where men suffered, women grew spiritless, and children went hungry, cold, and ignorant, and where those who sought to make things better got lost in a maze of words To Rousseau it seemed that one thing only was necessary—to simplify

He wanted to simplify religion, so that all men might share its comfort, to simplify social relations by making all men equal, to simplify manners by homeliness and thrift; and to simplify literature and art, and life in general, by what he described as "a return to Nature"—that is to say, by constantly referring ourselves to Nature itself instead of to society and books

#### THE MAN WHO SOWED THE SEEDS OF THE FRENCH REVOLUTION

He was stung by pain and suffering as Dr Johnson could never be. "Worn-out horses," he exclaimed, "ready to expire under the blows they receive, wretched peasants, attenuated by hunger, broken by weariness, clad in rags, hamlets all in ruins—these things offer a mournful spectacle to the eye, one is almost sorry to be a man, as

we think of the unhappy creatures on whose blood we have to feed " But if Rousseau felt these things more keenly than Dr Johnson, he did not possess that great man's solid and lasting common-sense Dr Johnson was a good man. Rousseau was a bad one To tell Rousseau's story, even in brief, would be to shock and disgust us It is enough to know that the later years of his life were spent in some form of madness, the seeds of which were probably growing all through his youth and manhood.

We cannot explain these things The great and virtuous Dr Johnson never altered one cruel, wicked, or tyrannous injustice The mad Rousseau made the poor very proud It was from Rousseau that the great movement sprang in France which altered the whole system of government We may say that he sowed the seeds of the French Revolution, and gave to all other nations fresh ideas and grander ambitions.

#### THE GREAT WATCHWORD THAT JEREMY BENTHAM GAVE THE PEOPLE

He who invents a great phrase does more than preach a sermon, for a phrase that sticks in the mind is like a lever thrust under the thoughts of men in order to turn them into a fresh channel The older we grow the more we shall see how mighty a thing it is to change men's opinions Every man clings to his own ideas Outside the radius of his own light all is darkness And this darkness is not illuminated by long books and speeches glowing with fine words It yields before the flash of a pithy sentence

To Jeremy Bentham belongs the honour of turning men's minds in a new direction, and this he did by a single phrase While but a few pored over his long books, the soul of Europe seized upon one single sentence therein and flashed it like a torch into the darkness that surrounded them.

This phrase was not strictly his own, but he it was who made it live It runs simply enough "The greatest happiness of the greatest number" Bentham wanted to find a reason for things—a reason for morality and a reason for law, he discovered it in this simple phrase. The object of morality and the object of law is the greatest happiness of the greatest number.



and work fewer hours, he preached to them a lofty gospel of duty to God and man, he set virtue always before their eyes. The mere political agitator, who sets class against class, would have felt the lash of Mazzini, who loved the common people because he always believed them to be the children of God.

EDMUND BURKE, WHO MADE MEN SEE THE PRINCIPLES THAT MOVED THEM

If we heard someone praising Edmund Burke, and asked what it was he did to deserve praise, the admirer of Burke would not be able to point to any definite achievement. He would not be able to say that Burke conquered this or that country, nor that Burke tore down a tyrant from a throne, nor that he wrote a book which has been the comfort and consolation of unhappy men. And yet the name of Edmund Burke remains one of the very greatest in the history of the world. He was only a voice, but a voice of power.

It has been finely said of him that he made great tides in human destiny very luminous. This meant that he could make men see the current of principle which carried them forward, make them aware of the reasons which moved them. The work of the great thinker is that of the interpreter. He interprets into human language the deep and obscure feelings of the soul. We know that we are often carried away by feelings, that we are often driven to do things without knowing why, it is the same with all men and women, and with nations. We are all conscious of being swept into certain actions, or of being intensely occupied by certain notions and ideas; but we cannot explain in simple language what it is that moves us.

How BURKE GOOD FOR FREEDOM AND HONOUR AMONG THE BRITISH PEOPLE

Burke was one of the great interpreters of justice, freedom, and morality. The work of which he was proudest was the spirit of justice, freedom, and morality which he breathed into our rule of India. He attacked before the whole world one of his own countrymen, Warren Hastings, for misconduct in India. This impeachment in itself was a small matter, the glorious result of it was that the whole of England realised its responsibilities in India for the first time. Burke made Englishmen feel the glory of freedom, the honour of justice,

Bentham was the son of a rich man, and was born, very weakly of body, in

Houndsditch, London, in 1748. He read history when he was three years of age, and at the same time began to learn Latin. At six he was playing the violin, and he matriculated at Oxford when he was only thirteen. He loved music to the end of his days, and kept a piano in every room of his house. He was fond of flowers, and had many shady walks in his London garden. He was modest, hospitable, and simple in his conversation. He died aged eighty-four. His body was dissected—as he had instructed—and, after being embalmed and dissected in his usual garments, it was set up in University College, London.

Room must be found in this brief chronicle of great thinkers for the noble-minded patriot of Italy, Joseph Mazzini. He was a man who loved Italy above everything else on this earth, and God above everything else in the universe.

JOSEPH MAZZINI, THE PATRIOT THINKER OF ITALY

He spent his life in exile, was imprisoned, was banished from country after country, and for many years lay under sentence of death. But his faith never wavered. At the dawn of his manhood he founded a society called Young Italy, which was to work for the freedom of the country, then oppressed by foreign tyranny and torn by quarrels within itself. The motto of this society was "God and the People", on its banner were the words "Unity," "Independence," "Liberty," "Equality," and "Humanity." From these ideals he never swerved.

His call came to him as he lay in prison. Looking out from his cell, he could see the sky and the sea. "Sym-bols of the Infinite" he called them. His only companion was a greenfinch; his only books were "a Tacitus, a Byron, and a Bible." In these circumstances it was that the call came to him, "God and the People."

The great work which he did as a patriot of Italy belongs to the world. His patriotism embodied humanity. Every nation has been the better for his life. Mazzini was one of those great souls who recognise God in politics. He did not seek to make the Italian free only that they might earn more wages

and the eternal necessity for morality. Ever since his day England has endeavoured to govern her vast empire, not as something to make her rich, but as something for which she is responsible to God and humanity.

**THE ENGLISHMAN WHOSE VOICE MOVED ALL EUROPE**

Burke stood for the honour of the English nation when George III would have taken from us our privileges, and made himself an autocrat. Burke was on the side of France in the Revolution, till the justice of that movement clad itself in the murderer's dress and built its walls of freedom in the blood and agony of despotism. He was ever on the side of justice and freedom, but it was as a man conscious of righteousness.

Although he practically swayed Europe with his voice, he had no place of power in England. When Windham received one of his greatest books, he wrote in his diary: "What shall be said of the state of things, when it is remembered that the writer is a man decried, persecuted, and proscribed, not being much valued even by his own party, and by half the nation considered as little better than an ingenious madman?" Oliver Goldsmith made a mocking epitaph upon him:

Here lies our good Edmund, whose genius was such,  
We scarcely can praise it or blame it too much.  
Who, born for the universe, narrowed his mind,  
And to party gave up what was meant for mankind.

Dr Johnson said that you could not meet Burke for half an hour under a shed without saying that he was an extraordinary man. It is curious to relate that at the end of his days, the king was going to make him a peer, with the title of Lord Beaconsfield. Before this happened Burke lost his only son, who was a foolish fellow. But this son was loved passionately by his father, who sank under the loss.

**THE STORM OF SORROW THAT BOWED DOWN A STRONG MAN**

"The storm has gone over me," he wrote, "and I lie like one of those old oaks which the late hurricane has scattered about me. I am stripped of all my honours, I am torn up by the roots and lie prostrate on the earth. I am alone. I greatly

deceive myself, if in this hard season I would give a peck of refuse of wheat for all that is called fame and honour in the world."

One of his wisest sayings about government was: "The question with me is not whether you have a right to render your people miserable, but whether it is not your interest to make them happy."

This wonderful man was born in Ireland, and made his way in the world with no interest of any kind. His father refused to help him because he would not follow the law as a profession. By his own splendid powers, his devotion to work, and his faith in the justice of his cause, he rose to be the inspiration of political Europe.

**ADAM SMITH, THE SIMPLE MAN WHOSE BOOK GAVE MEN NEW IDEAS**

Adam Smith, greatest of all writers on political problems, was a Scotsman, and as a child was stolen from his mother's door by travelling tinkers. His book, called "The Wealth of Nations," altered the ideas of men both in England and abroad. He was devoted to the working class, and was suspicious of tradesmen, merchants, and manufacturers.

"It is but equity," he says, "that those who feed, clothe, and lodge the whole body of the people should have such a share of the produce of their own labour as to be themselves tolerably well fed, clothed, and lodged." Also: "Our merchants and manufacturers complain much of the effect of high wages in raising the price, and thereby lessening the sale, of their goods both at home and abroad; they say nothing concerning the bad effects of high profits; they are silent with respect to the pernicious effects of their own gains; they complain only of those of other people."

This great and good man received honours on every hand, and followed his simple, modest, and useful habits to the end of his life, in 1790. He was a friend of Hume, the historian, and was known to the first minds in France. He became Lord Rector of Glasgow University.

John Stuart Mill was a man whose life will always remain one of the most interesting in human chronicles. His father, the son of a Scottish shoemaker, had raised himself by sheer force of literary industry to a position of importance in London. He had original

notions about things, and did not believe in schools. He educated his young son himself, and at three years of age John was learning the Greek language. The boy grew up in the companionship of this earnest father, and early in youth manifested singular powers.

#### THE SUDDEN THOUGHT THAT CAME TO JOHN STUART MILL

He was a man before he was a boy, and could hardly remember the time when he did not think. He received his "call" from reading a French translation of a work by Benthām. He set himself with enthusiasm to see the way which led to the greatest happiness of the greatest number. He wanted to make life happier and nobler, and he saw that the way out of misery could only be found by resolute thinking.

While he was striving with great enthusiasm for this grand object, a sudden chill struck through his soul. His soul asked the question: Suppose that all your objects in life were realised, that all the changes in institutions and opinions which you are now looking forward to could be completely effected at this very instant, would this be a great joy and happiness to you? He saw that his happiness lay in working for the grand end, not in the end itself. "I seemed," he said, "to have nothing left to live for."

So it must be with all philosophers and politicians who do not see that progress is infinite and eternal, that there cannot be any *end* at all, because man is immortal.

Mill found his work in seeking how to guard democracy from self-destruction. Many people thought that if workmen were given a vote the empire would fall to pieces, religion would be trampled underfoot, and the race of Englishmen would perish in sin. Mill did not think the danger was so great, but he certainly felt that something should be done to teach workmen, and, indeed, all kinds and conditions of men, that life was a serious and delicate experiment.

#### THE PLAIN PHILOSOPHER WHO MADE THE MULTITUDE THINK

The shouter at a street corner often knows nothing of history; he cares little what he says, he handles life as if it were a box of bricks. Mill saw that all men accepted the ruling of great men in the matter of science, and he

thought it should be possible to form a science of politics, the masters of which would tell democracy what was right and what was wrong in the ideas of politicians. He wanted certainty.

All his chief work was in this direction. He failed, but it was a failure which is better than many victories. There can never be certainty in opinions, and politics is largely a matter of opinions. Mill, however, has taught men to be careful how they think, and still more careful how they speak. He has shown us the danger of words, and made us steady workers for change, instead of violent, hot-headed revolutionists. More than this, he set people thinking who had never thought before, and to those who did think he brought more subjects for their thoughts, and fresh ideas for their illumination. He was one of those quiet and self-contained philosophers who effect great reformations by making the multitude think.

#### THOMAS CARLYLE, THE SCOTSMAN WHO ROARED AT THE WORLD

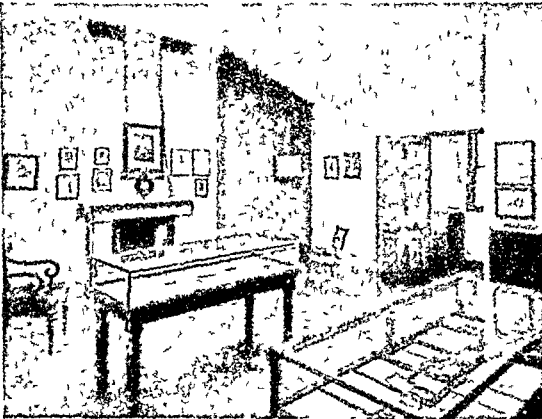
A very different man from Mill was his friend, Thomas Carlyle. Carlyle had no nervousness in his nature, no hesitancy about speaking. He opened his mouth and roared at the world. He was sure that what he had to say was the only thing worth saying, and, accordingly, he said it with energy.

Carlyle's gospel was the gospel of great men. The workman, armed with a vote and become master of the British Empire, was bid by this big-hearted Scotsman to study great men, to listen to the heroes, to bow before the divinities of the human race. While Mill was seeking, with laborious care, for certainty, Carlyle was shouting to the world that salvation lay in the worship of great men. He felt that he had read the riddle of the Sphinx.

There is much excellent truth in Carlyle. Huxley, the man of science, said that Carlyle's writings had saved him from becoming an idle and light-minded man, had made him earnest. But Carlyle rather overdid his gospel, for he was preaching energy to the most energetic nation on the face of the earth. He did not bring home to Englishmen their need for modesty, gentleness, refinement, spirituality. He shouted, "Work!" to a working world. He preached the very thing that has

the accents of other men's devotion. Even their prayers are hurtful to him, until he have made his own. This was his teaching, the direct relation between a man's soul and the God of the Universe. He inspired men to feel at home in the Infinite. He made them feel, too, that vice and cruelty and wickedness were base things, unworthy of them. Many people, of course, find fault with Emerson's opinions, but he remains head and shoulders above the great moralists and essayists produced by America.

John Ruskin was the son of a wealthy wine merchant, who besides being a capable man of business, was fond of pictures, statues, and fine buildings. Mrs. Ruskin was a handsome woman, very severe in her ideas, ungracious in her manner, but entirely excellent in devotion to duty. The little son of these parents had a strange infancy, his body, his brain, and his soul were watched over with an unceasing anxiety, he was not allowed to play with toys, his intellect was trained from the very first to observe



The study at the top of his house in Chelsea, where Carlyle used to escape from the noise of the hawkers in the streets.

Nature and reflect upon what he saw, many times he was whipped as a boy.

Thus trained, he grew to be extraordinarily clever, particularly in all matters relating to art. He became an enthusiastic worshipper of great buildings and noble pictures. He conceived the theory that buildings and pictures are the outward and visible signs of a nation's inward and spiritual feelings, buildings and pictures express a nation's religious feelings. His books on these subjects made him famous while he was still young.

Then came the natural next step. From the glorious buildings of the past he turned to those of the present—to the factory town, with its hideous chimneys, its blackened walls, its dreary streets of unmingled ugliness, and he

condemned the whole system which could produce such a state of things. He attacked men of science and politicians, he said that they were wrong, he denounced their philosophers, and derided their "laws of economy." It was enough for him that modern life wore a sooty coat and went on broken broths. He wanted sun, rose-coloured clouds, green pastures, and palaces of stone. He condemned the world.

But when with lavish generosity he himself endeavoured to set up model factories, the efforts proved a sad failure. No, not a failure; there is no failure in the work of a true soul. Although the co-operative and socialistic attempt at a model industry came to an end, the idea lived, lives now,

gathers in force, and is destined one day to rule the world. For man does not live by bread alone. As the race advances it feels how unsatisfying are the mere wages of labour. Each generation, a little better educated than the last, feels itself carried forward to a goal more honourable than

that which satisfied the past. Beauty becomes a religion. Ugliness wears the look of sin. This was Ruskin's work, in some ways the greatest work of modern times. His long life was loyally spent in bringing home to the business and bosoms of men the thought of beauty—beauty in buildings, in paintings, in vesture, in manners, in conduct. The forces against him were enormous—the forces of mammon, prejudice, and ignorance. But he neither stumbled nor quailed. His gospel has spread to other nations, his ideas are growing in the minds of every class. We cannot doubt that the present system, which makes life so hideous and dull, will pass utterly away and Ruskin's gospel of beauty become the religion of humanity.

The next Men and Women begin on 4915

the accents of other men's devotion. Even their prayers are hurtful to him, until he have made his own. This was his teaching, the direct relation between a man's soul and the God of the Universe. He inspired men to feel at home in the Infinite. He made them feel, too, that vice and cruelty and wickedness were base things, unworthy of them. Many people, of course, find fault with Emerson's opinions, but he remains head and shoulders above the great moralists and essayists produced by America.

John Ruskin was the son of a wealthy wine merchant, who, besides being a capable man of business, was fond of pictures, statues, and fine buildings. Mrs. Ruskin was a handsome woman, very severe in her ideas, ungracious in her manner, but entirely excellent in devotion to duty. The little son of these parents had a strange infancy; his body, his brain, and his soul were watched over with an increasing anxiety, he was not allowed to play with toys; his intellect was trained from the very first to observe

Nature and reflect upon what he saw, many times he was whipped as a boy.

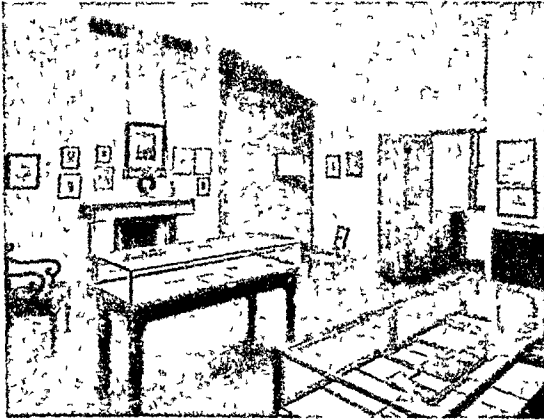
Thus trained, he grew to be extraordinarily clever, particularly in all matters relating to art. He became an enthusiastic worshipper of great buildings and noble pictures. He conceived the theory that buildings and pictures are the outward and visible signs of a nation's inward and spiritual feelings, buildings and pictures *express* a nation's religious feelings. His books on these subjects made him famous while he was still young.

Then came the natural next step. From the glorious buildings of the past he turned to those of the present—to the factory town, with its hideous chimneys, its blackened walls, its dreary streets of unmingled ugliness, and he

condemned the whole system which could produce such a state of things. He attacked men of science and politicians, he said that they were wrong, he denounced their philosophers, and derided their "laws of economy." It was enough for him that modern life wore a sooty coat and went on broken boots. He wanted sun, rose-coloured clouds, green pastures, and palaces of stone. He condemned the world.

But when with lavish generosity he himself endeavoured to set up model factories, the efforts proved a sad failure. No, not a failure, there is no failure in the work of a true soul. Although the co-operative and socialistic attempt at a model industry came to an end, the idea lived, lives now,

gathers in force, and is destined one day to rule the world. For man does not live by bread alone. As the race advances it feels how unsatisfying are the mere wages of labour. Each generation, a little better educated than the last, feels itself carried forward to a goal more honourable than



The study at the top of his house in Chelsea, where Carlyle used to escape from the noise of the hawkers in the streets

that which satisfied the past. Beauty becomes a religion. Ugliness wears the look of sin. This was Ruskin's work, in some ways the greatest work of modern times. His long life was loyally spent in bringing home to the business and bosoms of men the thought of beauty—beauty in buildings, in paintings, in vesture, in manners, in conduct. The forces against him were enormous—the forces of mammon, prejudice, and ignorance. But he neither stumbled nor quailed. His gospel has spread to other nations, his ideas are growing in the minds of every class. We cannot doubt that the present system, which makes life so hideous and dull, will pass utterly away and Ruskin's gospel of beauty become the religion of humanity.

The next Men and Women begin on 4945

# THE SEA

The spirit of freedom which one seems to absorb when in the full delight of a voyage over the sparkling sea has never been better rendered than in this poem by Barry Cornwall, whose real name was Procter. In this case it is supposed to be an old sailor who is speaking, but the salty breeze, which the poet has so cleverly suggested by the swift movement of his verse, is familiar to us all. There is a certain infectious quality of actual pleasure in this song of the sea that makes us for the moment sharers of the old sailor's love for the life of the ocean, though we may be conscious that there is another side to it less attractive.

**THE SEA ! the Sea ! the open Sea !**

The blue, the fresh, the ever free !  
Without a mark, without a bound,  
It runneth the earth's wide regions 'round,  
It plays with the clouds, it mocks the skies,  
Or like a cradled creature lies

I'm on the Sea ! I'm on the Sea !  
I am where I would ever be—  
With the blue above, and the blue below,  
And silence wheresoe'er I go  
If a storm should come and awake the deep,  
What matter ? I shall ride and sleep

I love—oh, *how* I love—to ride  
On the fierce, foaming, bursting tide,  
When every mad wave drowns the moon,  
Or whistles aloft his tempest-tune,  
And tells how goeth the world below,  
And why the south-west blasts do blow

I never was on the dull, tame shore  
But I loved the great Sea more and more,  
And backwards flew to her billowy breast,  
Like a bird that seeketh its mother's nest,  
And a mother she *was*, and *is* to me,  
For I was born on the open Sea

The waves were white, and red the morn,  
In the noisy hour when I was born,  
And the whale it whistled, the porpoise rolled,  
And the dolphins bared their backs of gold,  
And never was heard such an outcry wild  
As welcomed to life the Ocean-child

I've lived since then, in calm and strife,  
Full fifty summers a sailor's life,  
With wealth to spend, and a power to range,  
But never have sought nor sighed for change,  
And Death, whenever he come to me,  
Shall come on the wide, unbounded Sea

## ALEXANDER SELKIRK

William Cowper, the famous English poet, has endeavoured in this poem to suggest thoughts that might have arisen in the mind of Alexander Selkirk as he stood on the highest point of his lonely island and surveyed the scene on which his fate had cast him. For Alexander Selkirk was the shipwrecked mariner whose adventures on an island of the Pacific suggested to Daniel Defoe the immortal story of "Robinson Crusoe."

**I** AM monarch of all I survey,  
My right there is none to dispute,  
From the centre all round to the sea  
I am lord of the fowl and the brute  
O Solitude, where are the charms  
That sages have seen in thy face ?  
Better dwell in the midst of alarms  
Than reign in this horrible place

I am out of humanity's reach ;  
I must finish my journey alone,  
Never hear the sweet music of speech—  
I start at the sound of my own.  
The beasts that roam over the plain  
My form with indifference see,  
They are so unacquainted with men,  
Their tameness is shocking to me

Society, friendship, and love,  
Divinely bestowed upon men,  
O, had I the wings of a dove,  
How soon would I taste you again !  
My sorrows, I then might assuage  
In the ways of religion and truth,  
Might learn from the wisdom of age,  
And be cheer'd by the smiles of youth

Religion ! what treasure untold  
Resides in that heavenly word !  
More precious than silver and gold,  
Or all that this earth can afford  
But the sound of the church-going bell  
These valleys and rocks never heard—  
Never sigh'd at the sound of a knell,  
Or smiled when a Sabbath appear'd  
Ye winds that have made me your sport,  
Convey to this desolate shore  
Some cordial endearing report  
Of a land I shall visit no more  
My friends, do they now and then send  
A wish or a thought after me ?  
O, tell me I yet have a friend,  
Though a friend I am never to see  
How fleet is the glance of the mind !  
Compared with the speed of its flight,  
The tempest itself lags behind,  
And the swift winged arrows of light  
When I think of my own native land,  
In a moment I seem to be there ;  
But, alas ! recollection at hand  
Soon hurries me back to despair  
But the sea-fowl is gone to her nest,  
The beast is laid down in his lair ;  
Even here is a season of rest,  
And I to my cabin repair  
There's mercy in every place,  
And mercy—encouraging thought—  
Gives even affliction a grace,  
And reconciles man to his lot

## ETERNAL FATHER, STRONG TO SAVE

It is often said that many of the hymns used in our churches are deficient in literary quality, poor examples of verse, though their purity may be unquestioned. This charge can not be made against the following well known hymn, written by W. Whiting in 1860. It might best be described as a prayer in verse, and the words are not unworthy of the thoughts

**E**TERNAL Father, strong to save,  
Whose arm hath bound the restless wave,  
Who bidst the mighty ocean deep  
Its own appointed limits keep,  
O, hear us when we cry to Thee  
For those in peril on the sea !  
O Christ, whose voice the waters heard  
And hushed their raging at Thy word,  
Who walkedst on the foaming deep,  
And calm amid the storm didst sleep ;  
O, hear us when we cry to Thee  
For those in peril on the sea !  
Most Holy Spirit, who didst brood  
Upon the chaos dark and rude,  
And bid its angry tumult cease,  
And give, for wild confusion, peace ;  
O, hear us when we cry to Thee  
For those in peril on the sea !  
O Trinity of love and power,  
Our brethren shield in danger's hour  
From rock and tempest, fire and foe,  
Protect them wheresoe'er they go,  
Thus evermore shall rise to Thee  
Glad hymns of praise from land and sea

## ROBIN'S COME

We English readers might be somewhat puzzled in reading the following poem about the coming of the robin. It seems very curious for us to be told that the robin is the herald of spring. We know him as our dear little friend of the winter, when he is far more familiar with us than in the months of spring and summer. But in America the robin is a bird somewhat like our English thrush which, as we know, is our real harbinger of spring. The writer of the poem was William W. Caldwell, who was born in Massachusetts, America, in 1827, and wrote many poems as well as translations from the German.

From the elm-tree's topmost bough,  
Hark! the robin's early song,  
Telling one and all that now  
Merry springtime hastes along  
Welcome tidings dost thou bring,  
Little harbinger of spring  
Robin's come

Of the winter we are weary,  
Weary of the frost and snow,  
Longing for the sunshine cheer,  
And the brooklet's gurgling flow;  
Gladly then we hear thee sing  
The joyful reveille of spring  
Robin's come

Ring it out o'er hill and plam,  
Through the garden's lonely bowers,  
Till the green leaves dance again,  
Fill the air is sweet with flowers!  
Wake the cowslips by the rill,  
Wake the yellow daffodil  
Robin's come

Then as thou wert wont of yore  
Build thy nest and rear thy young  
Close beside our cottage door,  
In the woodbine leaves among,  
Hurt or harm thou needst not fear,  
Nothing rude shall venture near  
Robin's come

Singing still in vonder lane,  
Robin answers merrily,  
Ravished by the sweet refrain  
Alice clasps her hands in glee  
Calling from the open door,  
With her soft voice o'er and o'er  
Robin's come

## SOMEBODY'S DARLING

These lines by Mrs. Lacroix form a good example of the sentimentalism of a poet which, in the hands of a poet with a poetic power, would have been perceived very differently. The death of an unknown youth in battle is one of the simplest of dramatic episodes and can be made thrilling and impressive in a poet's description, but that is a task higher than that the sentimental poet can command.

Into a ward of the white-washed halls,  
Where the dead and dying lay  
Wounded by bayonets, shells, and balls,  
Somebody's Darling was borne one day—  
Somebody's Darling, so young and so brave—  
Wounded, yet on his pile, sweet face,  
Seem to be hid by the dust of the grave,  
The flickering light of his beacon'd grace

Matted and damp are the curls of gold,  
Keen the glow of that far-away brow,  
Pale are the lips of delicate mould—  
Somebody's Darling is dead of course—  
Back from his bed, smiling, bright, and brave  
Brushed off the war-dust and traces of cold;  
Toss his hands on his laurel crown—  
Somebody's Darling is tall and cool

Kiss him once for Somebody's sake,  
Murmur a prayer soft and low,  
One bright curl from its fair mates take,  
They were Somebody's pride, you know:  
Somebody's hand had rested there,  
Was it a mother's, soft and white?  
Or have the lips of a sister fair  
Been baptised in the waves of light?

God knows best—He has Somebody's love;  
Somebody's heart enshrined him there,  
Somebody wafted his name above,  
Night and morn, on the wings of prayer  
Somebody wept when he marched away,  
Looking so handsome, brave, and grand,  
Somebody's kiss on his forehead lay,  
Somebody clung to his parting hand

Somebody's waiting and watching for him,  
Yearning to hold him again to her heart,  
And there he lies, with his blue eyes dim,  
And the smiling, childlike lips apart  
Tenderly bury the fair young dead,  
Pausing to drop on his grave a tear,  
Cave on the wooden slab at his head—  
"Somebody's Darling slumbers here"

## THE FATE OF THE OAK

The idea expressed in this poem by Barry Cornwall is one that has been made use of many times and by many poets: the romance of the oak tree whose timbers go to the building of a vessel. But it is an idea that is not likely to be used much more, because the "wooden walls of London," as our old oak built men-of-war were named, are now things of the past, for steel has taken the place of timber in the building of most ships that sail the seas. Steel, however, has its romance not less than the monarch oak, and some day the poets may learn to sing of it in worthy verse.

The owl to her mate is calling;  
The river his hoarse song sings;  
But the oak is marked for falling,  
That has stood for a hundred springs—  
Hark, a blow, and a dull sound follows;  
A second—he bows his head,  
A third—and the wood's dark hollows  
Now know that their king is dead.

His arms from their trunk are riven,  
His body all barked and squared;  
And he's now, like a felon, driven  
In chains to the strong dockyard!  
He's sawn through the middle and turned  
For the ribs of a frigat's tree,  
And he's caulked and pitched, and burned,  
And now—he is fit for sea!

Oh, now—with his wings outspread  
Like a ghost—if a ghost may be—  
He will triumph again, though dead,  
And be dreaded in every sea  
The lightning will blaze about  
And wrap him in flaming pride,  
And the thunder-rod cannon will shout  
In the night from his bold broad side

And when he has fought and won,  
And been honoured from shore to shore,  
And his journey on earth is done—  
Why, what can he ask for more?  
There is naught that a king can claim,  
Or a poet or warrior be—  
Save a rhyme and a heart-driven tune  
And to mix with the common world!

# LITTLE VERSES FOR VERY LITTLE PEOPLE

ROBIN HOOD, Robin Hood,  
Is in the little wood  
Little John, Little John,  
He to the town is gone

Robin Hood, Robin Hood,  
Is telling his beads,  
All in the green wood,  
Among the green weeds

Little John, Little John,  
If he comes no more,  
Robin Hood, Robin Hood,  
He will fret full sore

OLD King Cole was a merry old soul,  
And a merry old soul was he,  
He called for his pipe, and he called  
for his bowl,  
And he called for his fiddlers three



For every fine fiddler had a fine fiddle,  
And a very fine fiddle had he,  
So old King Cole was a merry old soul,  
And a merry old soul was he,  
He called for his pipe, and he called  
for his bowl,  
And he called for his fiddlers three.

IF the old woman who lived in a shoe  
Had lived in a cottage instead,  
Her children could have played at hide-  
and-seek,  
And needn't have been sent to bed.

If little Bo-peep hadn't lost her sheep,  
She wouldn't have had to find them.  
If Little Boy Blue had not any sheep,  
He wouldn't have had to mind them

If the goose that laid the golden eggs  
Had not been killed that day,  
She'd still be laying golden eggs  
As hard as she could lay.

In fact, if we could manage things,  
How different they would be!  
But as we can't we'll let them stay  
Just as they are, you see.

I OFTEN sit and wish that I  
Could be a kite up in the sky,  
And ride upon the breeze, and go  
Whatever way it chanced to blow,  
Then I could look beyond the town,  
And see the river winding down,  
And follow all the ships that sail,  
Like me, before the merry gale,  
Until at last with them I came  
To some place with a foreign name

"WHY is Pussy in bed?"  
"She is sick," says the fly,  
"And I fear she will die,"  
And that's why she's in bed."  
"Pray what's her disorder?"  
"A lock'd-jaw is come on,"  
Said the fine downy swan;  
"And that's her disorder"  
"Who makes her nice gruel?"  
"That she might not get worse,  
Dog Tray is her nurse,  
And makes her nice gruel."  
"Pray who is her doctor?"  
"I," said famed Mister Punch,  
"At my back a great hunch;  
But I am her doctor"

"Who thinks she'll recover?"  
"I do, sir," said the deer,  
"And I thought so last year;  
I think she'll recover."

And when Puss is quite well,  
All shall have noble fare,  
Beasts, and fowls of the air,  
And we'll ring the great bell



# THERE'S NOTHING LIKE A DADDIE



I do not want a puppy-dog, although I know they're nice,  
For my papa can romp with me in ways that quite suffice.  
He'll bark just like a St Bernard, and like a mastiff growl,  
And you would feel like laughing when he imitates its howl.



I do not want a pussy-cat. I like cats pretty well,  
But daddie beats them all, and plays better than I can tell.  
He'll purr and hiss like anything; his mewling you should hear;  
It makes more noise than any cat, and, oh, I shake with fear!



I do not want a pony small. Of course they're lots of fun,  
But what's the use of ponies when you're my dear daddie's son?  
He takes me on his shoulders broad, or puts me on his knees,  
And sets me off a-galloping as madly as you please.



In short, I don't want anything as long as daddie's here.  
He's pretty much of everything, and don't get out of gear.  
And best of all the things boys have, I'm sure you'll find it true,  
There's nothing like a daddie who will always play with you!



holes in each set, we have in this "many-voiced siren," as it is called, a very convenient way of studying harmony. The subject of harmony is one upon which many large books have been written.

It is really as much a science by itself as the study of the rocks or the study of the stars, and men who want to know all they can of it require to devote their whole lives to it. But everyone can understand the first great fact about harmony, and the difference between harmony and discord.

#### WHY TWO NOTES THAT ARE SEPARATED SOUND EXACTLY ALIKE

For instance, we can arrange the many-voiced siren in just such a way that it gives out two notes, one made of exactly twice as many puffs as the other. It does not matter at all how many the puffs actually are—that is to say, it does not matter whether the notes are high-pitched or low-pitched—so long as the one note is made of twice as many puffs as the other, the one will always be the octave of the other. They will sound like two C's next to each other on the piano. Now, these two C's are really separated by a large number of notes, and yet they sound more like each other, and form a closer harmony, than any two notes much nearer together. Our experiment has given us the key to this, and to the whole of harmony.

The great law is that the ear judges by vibrations, or, to use the proper word, *ratios*. When we compare any harmony with any discord, the difference is in the ratios, or relations, between the numbers of the notes. We know that every possible musical note means a definite number of air waves striking the ear in a single second of time.

#### THE IMPORTANT FACT UPON WHICH ALL MUSIC DEPENDS

It is upon the relations between those numbers that all harmony and, indeed, all music depend. The simplest possible relation between two numbers is plainly the relation of two to one. Nothing else could be quite so simple as that, unless the two numbers are actually the same. Now, our experiment with the many-voiced siren teaches us that this relation of two to one gives our ears the impression of the closest resemblance and harmony that are

possible. Two notes making an octave have this relation between them, and no matter whereabouts in the scale we take them, high or low or in the middle, they will always have the same effect upon the ear. One note may have 24 vibrations a second, and the other 48, or the numbers may be 25 and 50, or 15,001 and 30,002, yet, whatever the actual numbers are, the ratio of them is as one to two, and so to our ears the one sounds almost like the "double" of the other.

All modern music is based upon this fact, and, by filling in the interval between the one note and the other with a varying number of other notes chosen in a certain way, we form what is generally called a scale.

Nothing would be easier than for a player on the violin to play a scale or any number of scales which we should call simply hideous. On the other hand, there are certain scales which the ear likes very much. Some of them have the effect of being mournful, and some of being untroubled or even gay.

#### THE MUSICIAN'S A B C, THE SCALE OF NOTES UPON WHICH ALL MUSIC IS BUILT

Ever since music began, and in all parts of the world where it has existed, it has depended upon the use of a scale, or set of notes. For instance, one set of notes was used long ago in England and in Scotland, certain sets were used in Greece, and certain sets are used to-day in India and Japan.

In every case the particular set or sets of notes make up the material or alphabet of the musician. A clever musician can at once tell, when he hears a tune, like one of the beautiful old Scottish tunes, to what period it belongs and from what place it comes, because he recognises the scale from which the composer has chosen his notes.

Let us first look at the ordinary scale that we can play on the piano by simply touching the white notes from C to C. To our ears, accustomed from our earliest years to hear this scale, and to hear tunes made from it, this sounds natural, and any other scale at first sounds rather peculiar, and less natural. But every musical scale has its definite laws, always to be found by studying the vibration numbers of the notes that make it. To this we must add that the

scale and then vibration numbers in the case where we happened to start with 24, and underneath these let us print the ratios of these numbers

C	D	E	F	G	A	B	C
24	27	30	32	36	40	45	48
1	$\frac{3}{2}$	$\frac{4}{3}$	$\frac{2}{1}$	$\frac{3}{2}$	$\frac{4}{3}$	$\frac{5}{4}$	2

We notice that these fractions vary in simplicity. The simplest is the fraction corresponding to G, and the next simplest is that of E, which is just half-way between C and G. These give us the common chord. It is very interesting to notice that one fraction in the above list is very decidedly less simple than any of the others—that is the fraction  $\frac{5}{4}$ , which corresponds to the note B in the scale of C.

Now, we are all quite able to sing a scale, and it is quite natural to us to strike the last note but one, which in this case is B. But when we have noticed that this ratio is really the least simple of them all, it is very interesting to learn from the history of music that this particular ratio had to be discovered.

#### THE NEW MUSICAL NOTES THAT WERE DISCOVERED IN RECENT TIMES

It appears that, to whatever part of the world we go, we find a time when the ears of musicians had not discovered this ratio as a way of getting from A to C. So they stopped at A. Very often, also, they had not discovered the ratio  $\frac{2}{1}$ , which corresponds to F. So it was that they had simply a scale made of five tones—C, D, E, G, A. This is the very famous five-tone, or *pentatonic*, scale, which we may say was the great scale of music until comparatively recent times, and the discovery of F, and more especially of the difficult ratio B, from which the scale can climb to a note exactly double of the note it started with, and so become beautifully finished.

There is no end to what might be learnt about the different kinds of scales, but what has been said gives us the key to the wonderful facts, and we discover that music, this great art which, at its best, affects us so deeply and nobly, may really be looked upon as a branch of applied mathematics, an application of the laws of the ratios of numbers.

When we are playing a scale of any kind on the piano or on the violin, or when we are singing it, perhaps one of the notes we make sounds quite wrong,

and we say that it is out of tune. What does this mean? There is nothing the matter with the note itself, remember, though, occurring where it does, it sounds so unpleasant that we are apt to think so. It may in itself be a lovely note, rich and clear, brilliant or tender. Nevertheless, where we hear it—perhaps in a scale or in the course of a song or a piece—it is simply dreadful.

#### WHAT HAPPENS WHEN THE PIANO IS OUT OF TUNE

The reason is that the vibration number of that note does not have the ratio it should have to the other notes. It is out of tune with them, or we might say that they are all out of tune with it. Anyhow, the ratio is wrong. If it is wrong because the vibration number is too small, we call the note flat, if the vibration number is too high, we call the note sharp.

One of the commonest mistakes in singing and in playing the violin is to make the notes flat. No matter how beautiful the voice or the tone of the violin, no matter how expressively played, no matter how good the rhythm, how well judged the varieties of time or anything else, no one can forgive music that is out of tune. Everything else may be right, but if the arithmetic is wrong, the result is not music, but simply a miserable parody of it.

It is right to ask what is the meaning of the black notes on the piano, lying here and there between the white ones that make the scale of C. What has happened is that, in the course of the development of music, the first great stage in the development of a scale has yielded to a second. The first great stage was when the five-note scale was improved into the ordinary scale we know so well. We are quite right to say improved, because nothing was lost in the process. The five-note scale is still there, of course, included in the other.

#### HOW FIVE NEW NOTES WERE ADDED TO THE ORDINARY SCALE

The next great stage was to add five more notes at certain places in between pairs of the notes of the ordinary scale. If now we play all these notes in order on any instrument, we get exactly the same sound and result as when we play all the notes on the piano, one after the other, including the five new black notes with the older white ones.

have an organ and a violin and a voice, and many other kinds of instruments, all sounding this same note, and yet the sounds are very different. Everyone would instantly know which was the note made by the violin and which was the note made by the piano.

#### THE MUSIC OF THE SIMPLE WAVES AND THE MUSIC OF THE MIXED WAVES

Clever people, too, can tell one piano from another, and it is often easy to tell one violin from another, and we can all tell the voice of one friend from that of another, that is true even though it is the same note that is being sounded in all these cases, and it is very interesting for us to discover where the difference lies.

To begin with, there are some kinds of musical instruments where the differences are not to be found. Tuning-forks, for instance, professing to sound the same note, really do sound the same note—without the difference that there is between a cheap violin and a good one. On careful study we find the reason for this difference. In the case of a tuning-fork, the sound waves are perfectly simple, but in the case of a violin or a voice or a piano or an organ-pipe, it is rather as if the waves were like big billows of the sea with little ripples on them, and with perhaps timer ripples on these ripples, if our eyes could see them.

Now, it makes a very great difference to our ears whether sound waves are simple, like a line simply waving plainly up and down, or complicated, with all sorts of smaller waves mixed up with the main wave. All the sounds that are valued in music are made up of these mixed waves. The main wave is called the fundamental note or tone, and all the other smaller waves which go with it are called over-tones or harmonics.

#### WHY DIFFERENT INSTRUMENTS MAKE DIFFERENT SOUNDS

These over-tones are equally interesting to the student of sound and to the student of music. It is the quality, the number, and the relative loudness of the over-tones that make the difference between one instrument and another, and one voice and another, even though they are all sounding the same fundamental note. This means that nearly all the musical notes we hear are really not single notes so much as combinations of notes. They are really harmonics,

only we scarcely notice them as such because the lowest note of the chord is so very much louder than all the others, yet they are, and they make all the difference between the sound of the violin or of the piano, the voice of one friend and that of another.

The great interest of music written for various instruments and for various kinds of voices consists in the endless variety that we are able to get by using one instrument with another kind of instrument which has different over-tones. Whatever the instrument employed, we desire that its over-tones shall be many and rich and harmonious. This is most notably true in the case of the violin and the human voice.

We all know that some violins, made many years ago, are worth thousands of pounds, while others may be worth as many pence or less, because, no matter whether we have the same player, the same bow, and the same strings in the two cases, the one violin will make a rich, lovely musical tone, and the other a thin, scratchy noise which would scarcely be called music by anyone.

#### THE SECRET OF THE WONDERFUL FIDDLES OF OLDEN DAYS

All this is wholly a question of over-tones. Somehow or other, one and the same string, played by the same bow, by the same hand, in the same room, produces lovely tones or ugly tones in the two cases, though the name of the note is the same.

There is something, then, about the body of the violin which makes all the difference, and this is now understood. The string is making not only the big main wave itself, but also the little waves. The secret of making the sound lovely is to have near the string something which can be made to vibrate when the string does, and it must be something which has the power of picking out from the string-waves just those over-tones which the ear likes best, then the tone will be enriched. In the wonderful violins of old days, the front and the back of the body seem to be made of exactly such size and shape and curvature and thickness that they both resonate in just the same way and to just the same notes. They help each other instead of fighting against each other, and that is their secret.

The next part of this is on page 4913.

the latest about the robbery?" addressing Mr Ralph, a director of the Bank of England

"The Bank will lose its money, I fancy," remarked Mr Andrew Stuart, the famous engineer

"On the contrary," replied Mr Ralph, "I hope we shall soon lay hands on the thief and as all the ports are being carefully watched, he will find it difficult to escape from the country"

#### A GREAT BANK ROBBERY, AND THE ESCAPE OF THE ROBBER

"The Morning Chronicle" considers that the person who has taken the £55,000 in banknotes is no ordinary bank-robber, but will be found to be a man of some position"

With this observation, Phileas Fogg emerged from the folds of "The Morning Chronicle" and was greeted by his friends. The conversation concerning the bank robbery was continued, and many theories were discussed as to how the thief might make good his flight

While some of the gentlemen considered the world was so large that one could easily get beyond the reach of the law Phileas Fogg maintained, in his quiet way that the world was no longer large, and the bank director agreed in thinking that the means of transit had made the world a much smaller place to live in. Thus it was that they came to discuss, as they played at cards, how long it would take to go round the earth

Three months was held to be the time required, but Phileas Fogg maintained that eighty days would be sufficient. Stuart, the engineer, offered to wager £4,000 that it was impossible. Phileas Fogg asserted that he was ready to start at once, and prove that he was right—that very night, in fact

#### MR PHILEAS FOGG MAKES A WAGER OF £20,000 IN STRANGE CIRCUMSTANCES

To show his confidence, he said he would risk £20,000 of his fortune on the venture, staking that sum against anyone who cared to accept the wager, and agreeing to pay it over if he did not make the tour of the earth in eighty days or less. His five fellow-clubmen accepted the wager, and Mr Fogg warned them that he would make the tour at their expense

"Now that's settled," said Mr Fogg "I find there's a train leaves Dover at 8 45 to-night, I shall travel by it"

"This very evening?" exclaimed Stuart, in a tone of great surprise.

"This very evening," replied Fogg, as coolly as though it were a matter of going to the next street. Consulting his pocket calendar, he continued "As this is Wednesday, October 2, I ought to be back in the reading-room of the Reform Club on Saturday, December 21, at 8 45 p.m., in default of which the £20,000 now lying at my bankers' will belong to you gentlemen"

Seven o'clock struck as he was speaking, and his friends offered to stop the game so that he might make his preparations for departure, but this he declared unnecessary, as he was always ready, and he continued playing till 7 25, when he said good-bye to his friends and left the club. Twenty-five minutes later he opened the door of his house and found Passepartout awaiting him

"We have to leave in ten minutes for Dover and Calais," he said, "as we are to go round the world in eighty days, so there's not a moment to lose"

#### THE SURPRISE OF PASSEPARTOUT, AND HOW THE GREAT TOUR BEGAN

The calmness with which he imparted this information to his new servant left that worthy Frenchman almost breathless with amazement. He suggested some of the usual preparations for travel, but his master dismissed them all by saying that they would take no luggage beyond night-clothes, a shirt or two, and three pairs of socks. Anything else would be bought on the way

By 8 o'clock Passepartout had made this simple preparation, and after carefully shutting up the various rooms he found his master ready. Into the travelling-bag Mr Fogg thrust an enormous bundle of banknotes, telling his servant to be careful of the bag, as it contained no less than £20,000. Thus they left the house, Passepartout carrying the bag and his master's waterproof and travelling-rug. The front door was double locked, and crossing to the cab-rank they hired a cab and drove rapidly to Charing Cross Station. At the station the five friends of Phileas Fogg were present to see him off, and he explained to them that he had a passport which he would get witnessed at every important place on his route as evidence of his journey. At 8 45 the

the latest about the robbery?" addressing Mr. Ralph, a director of the Bank of England.

"The Bank will lose its money, I fancy," remarked Mr. Andrew Stuart, the famous engineer.

"On the contrary," replied Mr. Ralph. "I hope we shall soon lay hands on the thief, and as all the ports are being carefully watched, he will find it difficult to escape from the country."

### A GREAT BANK ROBBERY, AND THE ESCAPE OF THE ROBBER

"The Morning Chronicle" considers that the person who has taken the £55,000 in banknotes is no ordinary bank-robber, but will be found to be a man of some position."

With this observation Phileas Fogg emerged from the folds of "The Morning Chronicle" and was greeted by his friends. The conversation concerning the bank robbery was continued, and many theories were discussed as to how the thief might make good his flight.

While some of the gentlemen considered the world was so large that one could easily get beyond the reach of the law, Phileas Fogg maintained, in his quiet way, that the world was no longer large, and the bank director agreed in thinking that the means of transit had made the world a much smaller place to live in. Thus it was that they came to discuss, as they played at cards, how long it would take to go round the earth.

Three months was held to be the time required, but Phileas Fogg maintained that eighty days would be sufficient. Stuart, the engineer, offered to wager £4,000 that it was impossible. Phileas Fogg asserted that he was ready to start at once, and prove that he was right—that very night, in fact.

### MR PHILEAS FOGG MAKES A WAGER OF £20,000 IN STRANGE CIRCUMSTANCES

To show his confidence, he said he would risk £20,000 of his fortune on the venture, staking that sum against anyone who cared to accept the wager, and agreeing to pay it over if he did not make the tour of the earth in eighty days or less. His five fellow-clubmen accepted the wager, and Mr Fogg warned them that he would make the tour at their expense.

"Now that's settled," said Mr. Fogg. "I find there's a train leaves Dover at 8.45 to-night, I shall travel by it."

"This very evening?" exclaimed Stuart, in a tone of great surprise.

"This very evening," replied Fogg, as coolly as though it were a matter of going to the next street. Consulting his pocket calendar, he continued: "As this is Wednesday, October 2, I ought to be back in the reading-room of the Reform Club on Saturday, December 21, at 8.15 p.m., in default of which the £20,000 now lying at my bankers' will belong to you gentlemen."

Seven o'clock struck, and he was speaking, and his friends offered to stop the game so that he might make his preparations for departure, but this he declared unnecessary, as he was always ready, and he continued playing till 7.45, when he said good-bye to his friends and left the club. Twenty-five minutes later he opened the door of his house and found Passepartout awaiting him.

"We have to leave in ten minutes for Dover and Calais," he said, "as we are to go round the world in eighty days, so there's not a moment to lose."

### THE SURPRISE OF PASSEPARTOUT, AND HOW THE GREAT TOUR BEGAN

The calmness with which he imparted this information to his new servant left that worthy Frenchman almost breathless with amazement. He suggested some of the usual preparations for travel, but his master dismissed them all by saying that they would take no luggage beyond night-clothes, a shirt or two, and three pairs of socks. Anything else would be bought on the way.

By 8 o'clock Passepartout had made this simple preparation, and after carefully shutting up the various rooms he found his master ready. Into the travelling-bag Mr. Fogg thrust an enormous bundle of banknotes, telling his servant to be careful of the bag, as it contained no less than £20,000. Thus they left the house, Passepartout carrying the bag and his master's waterproof and travelling-rug. The front door was double locked, and crossing to the cab-rank they hired a cab and drove rapidly to Charing Cross Station. At the station the five friends of Phileas Fogg were present to see him off, and he explained to them that he had a passport which he would get witnessed at every important place on his route as evidence of his journey. At 8.45 the

Early on the morning of October 22, they had arrived at the end of the railway, with a matter of fifty miles to Allahabad still to be completed, although the completion of the railway to that town had been announced. Phileas Fogg was determined not a moment should be lost in continuing his journey, and the only means that seemed possible was to hire an elephant.

Even this was not easy, as the only Indian at Kholby, the village at which they had arrived, who had an elephant had no wish to part with it. Not even in offer of a thousand pounds moved him, and only when Mr Fogg offered the enormous sum of £2,000 would the Indian sell the animal. Passepartout was aghast at such a price being paid for an elephant, and Sir Francis Cromarty no less. But without delay the animal was got ready for the journey, and a young Paisee offered himself, and was engaged as driver.

They had arrived at eight, and at nine o'clock they set out on the back of the elephant taking the road which led through a beautiful forest of palms. By eight o'clock at night they had gone half-way to Allahabad. Setting off again at six o'clock next morning, the guide hoped to arrive in Allahabad that

evening, and would no doubt have been as good as his word, but about four o'clock, as they were threading their way through a thick forest, they happened to espy a strange religious procession, conveying a dead rajah to a forest-temple. There were many priests in the procession, which was accompanied by wind music, and a young woman, almost as white as a European, was being dragged by them, clearly against her will.

"A suttee!" whispered Sir Francis to Mr Fogg, who did not seem to understand what he meant. "A suttee," he continued, "is a human sacrifice, but the victim is supposed to be voluntary. This young woman, no doubt the widow of the dead rajah, will be burnt alive early to-morrow morning."

"At sunrise" said the guide, "but hers is not a voluntary sacrifice, as everybody round about here is aware."

Phileas Fogg was greatly impressed with what they had seen, and seemed troubled in thought after the procession had disappeared and the guide had resumed the journey. "I am still twelve hours to the good, and I would willingly give these hours to save the young woman," he said quietly. The guide was able to give more



PASSEPARTOUT WAS DRIVEN FROM THE TEMPLE WITHOUT HIS BOOTS

marched clear through the crowd to where Mr Fogg and Sir Francis Cromarty stood "Let's get on," it said. For it was Passepartout himself, who had profited by the smoke of the funeral pyre to steal into the thick of it and rescue the intended victim from the flames which were now buisting forth!

#### THE ESCAPE INTO THE FOREST AFTER THE RESCUE OF Aouda

An instant afterwards and all four had disappeared into the forest, being carried forward at a steady trot by the elephant. Not a moment was to be lost, as they had gone but a little way when they heard cries which indicated that the ruse had been discovered, and a gun-shot pierced the hat of Phileas Fogg. But success attended them, for the guide knew all the secrets of the forest, and forced the elephant to the height of its pace, so that by ten o'clock they were at Allahabad, where the railway journey was resumed to Calcutta.

Mr Fogg, in paying the guide, gave him the exact sum agreed upon, which astonished Passepartout, as his master had shown himself so generous. But as Mr Fogg had no further use for the elephant, he presented that to the faithful Parsee, who protested that it was a fortune he was offering him. "Accept it, and it is I who will be your debtor," was all that Mr Fogg would say.

A few minutes afterwards he and his companions, together with Aouda, who was given the best place, were snugly installed in the railway carriage, proceeding at all speed to Benares, where Sir Francis took leave of Mr. Fogg and wished him all success. By seven o'clock in the morning Calcutta had been reached, and as the mail-boat for Hong Kong would not weigh anchor till noon, Mr. Fogg had still five hours before him.

#### THE ARREST AT CALCUTTA, AND HOW THE TRAVELLERS GOT AWAY

But just as Mr Fogg was about to quit the station, he was met by a policeman, who asked him if he was Mr Phileas Fogg, and the man with him his servant. "Yes," said Mr Fogg. The policeman then requested both of them to follow him and said Aouda might accompany them.

They were conducted to a carriage, and in twenty minutes, during which none of them spoke, they were driven

to a court-house of the district, and were soon brought before a magistrate.

Very soon the reason for this unexpected interruption was apparent, when Passepartout stood charged with behaving in a disorderly manner in the temple at Bombay. His master was also involved in the charge, and the detective Fix was congratulating himself on his ingenuity in having reported the matter to Calcutta and secured the arrest of Fogg and Passepartout, as he hoped thus to detain them until the arrival of the order of arrest from England. But that ingenious officer had not been prepared for Mr Fogg undertaking to pay any possible sum that might be named as bail, certainly not a thousand pounds each!

This Mr Fogg did cheerfully, to the wonder of not a few; and Passepartout's boots, brought from Bombay as the strongest evidence against him, were returned to their owner, who considered they had become the most expensive pair of boots in all the world.

#### OFF TO HONG KONG, WITH FIX, THE DETECTIVE, IN PURSUIT

Mr. Fogg and his companions left the court-house and drove straight for the quay, followed closely by the detective. There in the harbour lay the steamship Rangoon, with steam up and the Blue Peter floating from the masthead. Mr Fogg hailed a small boat, and was rowed towards the steamship in the company of Aouda and Passepartout. This was too much for the detective, who stamped his feet in anger.

"The rascal!" he exclaimed. "He is going off at a sacrifice of £2,000! Only a robber could be so free with his money. Ah, but I'll follow him to the end of the world, if necessary! Only, if he goes on like this, all the stolen money will be spent by then!"

Fix had therefore to join the Rangoon without waiting until the order of arrest had arrived, and he had to be very careful not to excite suspicion in the minds of those whom he was tracking, so that he pretended it was an extraordinary coincidence to meet them again. In the course of the journey he managed to draw from Passepartout the story of Aouda and how she came to be one of their travelling-companions! This was, the detective thought, important news to him, as he hoped he might use it to



## THE CHILD'S STORY OF FAMOUS BOOKS

carried one of the three passengers who had hoped to join it. For poor Passepartout, overcome by the opium and left by the detective, kept repeating "The Carnatic, the Carnatic!" as the effect of the drug began to pass away.

### HOW PASSEPARTOUT BECAME A CIRCUS PERFORMER IN JAPAN

And this fixed idea had enabled him, while still half fuddled, to make his way from the opium den and tumble on board just as the vessel was about to sail. But we can imagine his dismay when he came to his senses next day, and discovered how foolishly he had acted. On November 13 he found himself at Yokohama, and, having no money left, he was reduced to join a troupe of ridiculous circus performers known as the "Long Noses," because they all wore enormous noses, several feet in length, when going through their acrobatic antics. As the troupe was about to go to America, Passepartout thought that this was a good plan for getting his passage thither, now he had lost his master. His brawny form made him just the man for the base of the "human pyramid," which was the great attraction of the performance of the "Long Noses." He was fulfilling that responsible position one day when he suddenly seemed to forget his work, and let the other members of the "human pyramid" tumble to the ground, while he ran forward and threw himself at the feet of one of the spectators, crying "My master, my master!"

"You?" said Phileas Fogg. "Very well, then, let's get off to the steamer."

But Mr Fogg had to part with a good handful of banknotes to the manager of the circus before that person let the latest of his "Long Noses" depart. And Passepartout, in the excitement of finding his master again, went all the way to the boat without taking off the ridiculous nose that he was wearing.

### MR FOGG ARRIVES AT YOKOHAMA AND FINDS HIS SERVANT

Thus we see that Mr. Fogg's signal of distress had been successful, as he, with Aouda and Fix, had been taken on board the American steamer, General Grant, after paying the master of the Tankaderu the full sum agreed upon, and the prize as well. He had arrived at Yokohama, there to discover that

Passepartout had actually been carried by the Carnatic to that port, and an hour or two later he found his servant in the circumstances just described.

On the American steamer they set out for San Francisco, and nine days after they had left Yokohama, Phileas Fogg had covered exactly one-half of the journey round the world. In other words, on November 23 the steamer had passed the hundred and eightieth meridian. Now, where was the detective? He was actually on board the General Giant, keeping in his cabin to avoid meeting Passepartout as long as possible.

### FIX, THE DETECTIVE, RECEIVES THE ORDER OF ARREST TOO LATE

At Yokohama he had discovered that the British consul had just received the order of arrest which Fix had missed at every other stopping-place on Mr Fogg's journey; but as Mr. Fogg had now left British territory it was useless. The detective's desire was now to hasten Mr Fogg's journey back to England, so that he could arrest him the moment he arrived there; he had no longer any wish to delay him, as both their interests were the same so far as the return to England was concerned. When Fix did encounter Passepartout on deck, the latter gave him a good thrashing, which the detective took as if he deserved it, and then explained why he no longer wished to delay Mr Fogg.

On December 3 the steamer passed through the Golden Gate, and arrived at San Francisco. While walking in the town that day, Mr Fogg, "by the most remarkable chance," met the detective, who had kept out of his sight during the voyage. "Business" had recalled him to Europe, so he explained how delighted he would be to travel thither in the company of Mr Fogg. Meanwhile, Passepartout had been buying some revolvers, as the railway journey across America in those days was not without danger; and at six o'clock that night the train steamed out of San Francisco with Mr Fogg and his companions as passengers.

In three days and three nights they had covered a matter of 382 miles. Four more days and four more nights should have taken them to New York, but the trouble, for which Passepartout had prepared, came, as the train was

attacked by a band of Sioux Indians, who endeavoured to stop it, after disabling the driver, but, of course, did not know which of the handles to work.

### PASSEPARTOUT SAVES HIS FRIENDS FROM INDIANS, AND IS CAPTURED HIMSELF

Thanks to Passepartout, the passengers were saved by his managing to crawl along the bottom of a carriage and disconnect the engine from the train, so that while the engine went on alone, the carriages slowed down at Fort Kearney station, where the Indians made off, afraid to meet the soldiers stationed there.

It was found, however, that Passepartout and two others had been taken prisoners by the Indians, and, of course, Mr Fogg would not continue his journey until his servant's fate was assured. A company of soldiers were sent in pursuit of the Indians, and next day they returned with Passepartout and the other two, whom they had recovered alive from the Sioux. But, meanwhile, the train had been made up again, and had continued on its way to New York. The next train would not leave until that evening. This meant a serious delay, as Mr Fogg had to catch the steamer for Liverpool at New York at nine o'clock on the evening of the eleventh. As the ground was covered with snow, and a strong wind was rising, there remained the possibility of making good speed in an ice-boat!

### A SURPRISING JOURNEY OVERLAND IN AN AMERICAN ICE-BOAT

So, in a large sledge furnished with strong sails, the party set out to cover the 200 miles between Kearney and Omaha, where the railway to Chicago could be joined. The run of the ice-boat was an entire success, and at Chicago there was no lack of trains for New York. But, alas, Mr Fogg was three-quarters of an hour late in New York, and the Liverpool steamer had gone!

There was nothing for it but to hire a boat, and this was no easy matter. Not until he had offered the captain of a steamer £1,600 to take himself and his three companions to Bordeaux, where the steamer was bound, could he get away from New York. But, of course, he did not wish to go to Bordeaux, and when they had been

at sea some days Mr Fogg had to take the extreme measure of bribing every member of the crew, then imprisoning the captain, and assuming command himself, for it now appeared that he was a practised navigator.

They had got to within 770 miles of Liverpool when the coal entirely gave out, and Mr Fogg then brought the captain to reason by the simple process of buying the vessel from him at £12,000, which was much above its value. He then gave orders to burn the masts, and so they went along, tearing up all the woodwork to feed the furnaces, until, when they arrived at Queenstown, the vessel was only a fragment of what it had been. But Mr Fogg presented it to the captain, and left him on friendly terms.

### MR FOGG ARRESTED AT LAST, AND WHY HE THOUGHT HE HAD LOST HIS WAGER

Train to Dublin, and steamer to Liverpool left him only six hours to do the journey from the Mersey port to London. It would have been sufficient, but, as he stepped on the quay at Liverpool, Fix, the detective, laid his hand on his shoulder and, showing the order of arrest, said

"I arrest you in the Queen's name!"

So off to prison was Mr Fogg hurried, and he had been two hours there before Passepartout and Aouda arrived in company of Fix, the latter out of breath and his hair wildly disordered, to announce that it was all a mistake, as the real bank-robber had been arrested! Mr. Fogg said not a word, but, with automatic precision, lifted his hand and struck the stupid detective to the ground. He walked away with Aouda and Passepartout, hired a carriage to the station, commanded a special train to London, and arrived there as the fingers of the station clock showed ten minutes to nine. He was five minutes late and had lost his wager!

Not only had poor Phileas Fogg lost his wager, but he had wasted his fortune, and Aouda sought to console him in his dejected frame of mind. She had really come to love the strange, quiet man, who, on every occasion on which he was tested, had shown the kindest of hearts. And he himself was in love with her, though he would never have avowed it. It was therefore left to Aouda to propose

# FERNS AND FEATHERS OF THE SEA



We only realise the beauty and delicacy of the various seaweeds that are found in the waters round our coasts when we collect them and, after pressing the specimens, arrange them on sheets of paper, as shown here. All the "ferns and feathers of the sea" on this page are common specimens found abundantly round the British coasts.

and then we pass these into the dish, beneath the floating specimen that we wish to mount. While the seaweed is still in the water, we remove any lingering impurities, such as grams of sand, with a camel-hair brush, and then raising our zinc and paper so that the specimen rests upon the paper, though it is still in the water, we arrange it neatly and artistically by means of the brush. If there are any ugly pieces or ends that spoil the general outline of the specimen, these may be snipped off under water with scissors.

So soon as the specimen is nicely arranged on the paper, we raise the zinc gently out of the water, taking care not to disarrange the seaweeds. The water runs off the paper and through the holes in the zinc. Now slide the sheet of mounting-paper, on which the specimen is resting, off the zinc on to a sheet of muslin or calico that has previously been laid on some sheets of thick blotting-paper.

### MOUNTING THE SEAWEEDS

With a perfectly clean sponge of fine texture mop up the water that is lying on the paper, taking care, however, not to touch or disarrange the specimen in any way. Then lay over the paper and specimen another clean, smooth piece of muslin or calico, and on top of this several sheets of blotting-paper. The whole must then be put into a press, but the pressure must not be very great. If a press is not available, use large, heavy books, laying them on evenly and carefully. After two or three hours, the blotting-paper should be removed, and fresh paper put in its place, but the muslin or calico must not be removed. At intervals of twelve or fifteen hours, this process should be repeated, and at the end of four days the calico may be removed, and the seaweed itself transferred to dry paper, and, if necessary, pressed as before.

In most cases it will be found that the specimen will adhere to the mounting-paper under pressure without any adhesive material being necessary. Should it be necessary, however, to stick the seaweed down, the following is an excellent method. Boil some milk, and skim off the skim that rises to the top. Then placing the specimen upon a piece of smooth calico, with a sponge or soft rag moisten the paper with the milk, and lay the sheet carefully upon the weed, which will adhere to the paper. The sheet should then be put under pressure as before.

### HOW TO MOUNT THICK SEAWEEDS

The thicker kinds of seaweeds, like bladder-wrack and its relations, should be washed in fresh water to remove the salt, and may then be dried between towels and pressed in the manner stated above. To affix these to the mounting-sheets, a little gum may be used. With these coarser weeds, if it is not convenient to mount them at once, we may allow them to dry in the air, and then, whenever we are ready to mount, we should soak them in boiling water for about twenty minutes. This removes the salt and other impurities, and afterwards they may be washed in fresh water, and pressed as described.

The sticky kinds of seaweeds, after being arranged on paper, should be allowed to dry in the air before being pressed, or they will adhere to the calico and be spoilt.

All specimens should have written against them the time and place where they were gathered, and their name and family, if possible. It will take time to identify all our specimens, but this may be done by consulting a book upon seaweeds with coloured plates, such as is to be found in most public libraries.

### CATALOGUING THE SEAWEEDS

Like land plants, the great family to which the seaweeds belong are arranged in groups, and many of the species can be distinguished from one another only by close examination. This work of identifying what we have collected and mounted is, however, interesting, and, of course, a named collection is infinitely more valuable and creditable than a mere collection of odds and ends, the names of which are unknown. It is impossible here to give any account of the various species of seaweeds, but we shall find it helpful to know that there are three main groups—the green, the red, and the olive-coloured.

The first group consists principally of thread-like or net-like weeds, and most of its varieties are found not in the sea, but in fresh water.

The weeds belonging to the second group are exclusively marine. They are, as the name implies, nearly always red in colour, and are very light and delicate, and frequently almost transparent. Some are like moss in appearance, others resemble ferns, and others look something like coral. They are the most attractive of all the seaweeds from the collector's point of view, and many of those in the picture on page 4876 belong to this group.

The third group is also exclusively marine. The weeds belonging to it are generally large and coarse, and in foreign waters are almost like small floating trees. The very common bladder-wrack of our coasts, that coarse, brown weed with fronds and air-vessels that is found everywhere, and dries black, grows sometimes to a height of ten or eleven feet, and the clusters are often twelve feet or more in circumference. Some weeds of this group are small and beautiful, while others are flat.

### HOW TO KEEP THE SPECIMENS

When we have collected a large number of seaweeds and have arranged our specimens on sheets of paper as described above, so that they present somewhat the appearance shown on page 4876, the next question that arises is where and how shall we keep these sheets.

The sheets look very well indeed when framed and hung upon the walls of a study or dining-room. Expensive frames are not needed, those sold at about a shilling or eightpence each in many shops are quite good enough for the purpose.

Instead of a portfolio we can use a box, especially if we are collecting several specimens of each kind of seaweed.

Whatever may be the plan followed, the great thing is to observe neatness and order in the arrangement of the specimens.

6 A useful point to remember when beginning is that each capital can be fitted into a square, except, of course, the letters I and J, which fill one square between them.

The letters in picture 3 have been done with a brush dipped in ink, which, by the way is a better thing to use than a steel nib when brown paper or any other rough substance has to be written upon. Or a quill pen will make excellent letters.

Let us look at the pictures of the two luggage-labels on page 4879. Which is the clearer and more easily read? The bottom

one, of course, and yet it took but very little longer to do than the other. We must always remember to give prominence to the most important word by writing it in the largest letters, or using another set of letters, as we see has been done on the second label. This rule applies to everything—not only to addresses.

At first we shall need a pencil-line as a guide to keep the letters straight, but when we have become more accustomed to the work, we shall be able to do without this, just as we do without it in ordinary writing.

## A CABINET MADE FROM CIGAR-BOXES

WITH three cigar-boxes, and close attention to the instructions given in this article, we can make a very handy little wall cabinet

that will serve many useful purposes. Two of the cigar-boxes should be of similar size, but the third need not be quite the same size, as it is going to be pulled to pieces and the wood of it used. First we must take off all the paper. This can easily be done by damping with a wet sponge and letting the boxes stand a few minutes before

removing the paper. When we have got all the paper off, we must allow the boxes to dry gradually, and not seek to hasten the process by putting them in front of the fire, which would probably crack the wood. The third box we take apart, being as careful as possible not to break the pieces, and keeping the nails, which we shall use presently.

Most cigar-boxes have a brand-mark burnt in on the outside of the lid, so we turn the lids, making the inside what was formerly the outside.

After cutting two strips of wood from the cigar-box that we took to pieces, and making them the proper size, we fit them into the cigar-boxes, as seen in picture 1, to do duty as shelves. Two nails from each side through the two

sides of the boxes will keep them in position. Now we take two pieces of linen or cotton, cut them to some ornamental

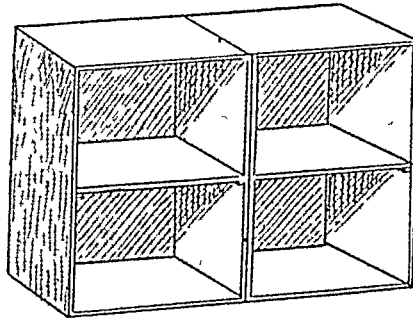
shape, and glue them to the lid and to the back of the box, so as to make hinges, as seen in picture 2.

Then we glue the front sides of the two boxes face to face, and this will give us a two-compartment cabinet, with a shelf in the middle of each compartment, as seen in picture 1. With pieces of the broken box we make two slips—one to go right along the top of our cabinet outside and the other right along the bottom. Picture 3 shows that the piece on top and the piece on the bottom are similar in pattern.

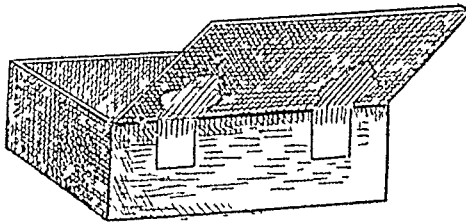
Both should be glued on, and a few nails will help them also, but we must take care not to split the wood. Now by putting on a long piece top and bottom, supported by two brackets, which we cut from the third box, we can give our cigar-box cabinet both strength and ornamentation. We now cut a narrow strip of wood about half an inch wide and the length of the doors.

After rounding this on two of its corners, we glue it to the edge of one of the doors, so that it will come over the edge of the other door, as seen in picture 3. Two tiny brass knobs, one for each lid near its edge, will complete the cabinet, which we may hang in our bedrooms, and which we shall find convenient for museum

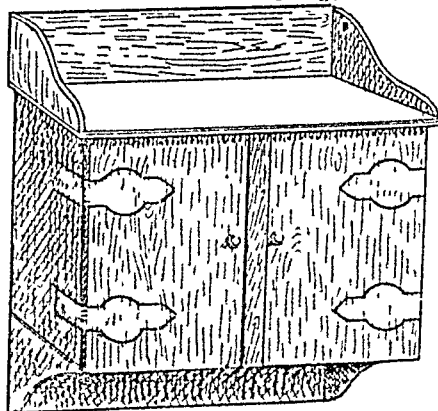
specimens, for tiny bottles, for seeds, and many other things that boys and girls have and ought to keep in proper order.



1. Two boxes, with shelves



2. One box, showing hinges



3. The wall cabinet complete

# HOW TO CHOOSE CHRISTMAS PRESENTS

THE art of choosing Christmas presents lies not only in studying the tastes of the persons for whom they are intended, but in finding out precisely what is needed in each case—sometimes a very difficult task.

With Christmas so near at hand, a few suggestions may, perhaps, not be unwelcome. To begin with, of course, we must remember that pocket-money is by no means elastic, it has, on the contrary, an unpleasant habit of shrinking very quickly long before we have half finished our purchases, so that, though we naturally scorn things of the "cheap and nasty" type, they must be as inexpensive and as original as possible.

At the top of our list comes mother. It is just possible that she might be in want of a new thimble, if so, the silver ones lined with steel are by far the best, for they wear excellently. A good one costs about 3s 6d, but if that is too dear she might like a leather spectacle-case, costing about 1s, or, better still one of the chatelaine pattern to hang on to the waistband, at about 2s 6d, or a little bottle of scent—one can, of course, pay anything from 6d to 10s for this—or a cosy pair of bedroom slippers, which can be bought for 2s 6d or thereabouts.

## SOME INEXPENSIVE PRESENTS

And if all these things are too expensive, why not buy a dainty calendar to hang up on the wall? Or we might make a little cushion of flowered cretonne stuffed with bran. We could, no doubt, find some odd pieces from chair-cover cuttings. The cushion, which should measure about seven inches square, should be covered with white brook-muslin with a pleated or gathered frill all round the edge, finished off with a dainty bow of pink ribbon. We should choose a big rose-patterned cretonne, so that the colour shows very distinctly through the cover.

A tiny "Dorothy bag," made of silk or brocade, to hold a ball of crochet cotton is useful and easily made. If we are not sure how to cut it out, we can look at page 2569.

If we begin early, nothing, of course, could be nicer than to work the ribbon-work table-square described on page 2151, or the handkerchief or glove sachets mentioned on page 1183, or the brush and comb bag on page 983.

Flower-pots make pretty gifts. They are now to be had in soft shades of blue and green and pink, and quite artistic shapes can be bought for 1s or 1s 6d; or, of course, one can spend a little more and get something quite delightful in beaten copper-work or brass. A fern or aspidistra plant will fill an odd corner of the sitting-room, or a pair of glass flower-vases for the table, at about 9d or a 1s each, is certain of finding a welcome.

## PRESENTS FOR A GIRL

Those of us who have grown-up sisters or aunts who must not be forgotten will find many of these things quite as suitable for them. A grown-up sister would love a silver pocket-mirror, which we could buy for 1s 6d or 2s, or a fancy hatpin, which would cost

less. A silver hatpin-stand for the dressing-table can be bought for about 3s 6d. A pair of gloves at 2s 6d, or a little embroidered handkerchief, for which we need not pay more than 6½d or 8½d, or a veil, are certainly not very original, but nothing is more sure of a welcome.

The hockey-scarf mentioned on page 1348 makes a useful present, so does the Dorothy bag already referred to, if it is made big enough to hold a pair of party shoes, or it might even be cut square for a work-bag for mother. An old lady might like one of these bags in silk for a church bag, to carry her Prayer-book, hymn-book, handkerchief, spectacles, or any other small articles.

## USEFUL AND ATTRACTIVE GIFTS

A big sister might like one of those little rolled-gold safety-pins which are so useful to fix a blouse-tie, or a turn over collar. These cost about 2s. Or a little "safety" purse, either in leather with a long silk cord attached, which costs about 1s, or, better still, the kind described on page 4028, which we could, of course, make ourselves.

A bag for carrying opera-glasses is another useful present. These bags are made now in various colours with a little looking-glass underneath. The bottom of the bag is stiffened to hold the glass firm, and the top is drawn up by a cord. These cost about 1s 6d or 2s and are really very useful to anyone, for they hold a purse and handkerchief as well as the glasses.

A miniature edition of the poets makes a charming little present. All the bookshops keep quite a big selection at prices varying from 6d to 1s 6d.

Then, again, nothing can be more useful than a buckle in silver, or in that art metal-work which is now being used a great deal in very attractive designs. These cost about 3s 6d.

Many fancy-shops keep useful little black silk knitted purses with gilt frames to fasten to one's umbrella. These are useful to people who travel much by omnibus or tram-car. They are made to take two or three coppers or a railway ticket, and only cost 6½d.

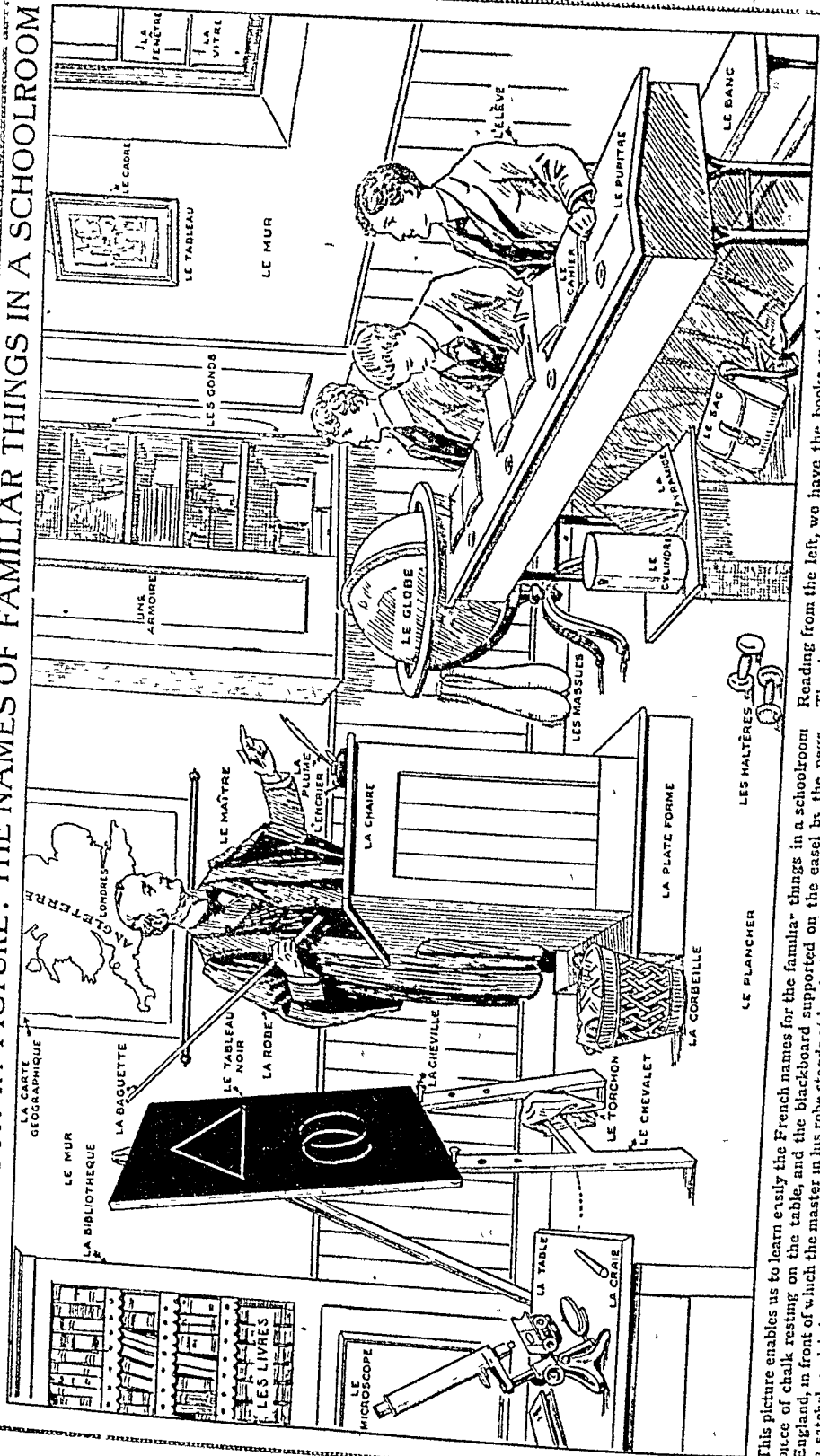
Many girls would welcome a manicure rubber. We should choose the large wooden ones at 1s or 1s 9d in preference to those made in silver, which are not nearly as serviceable.

A song makes a welcome present if a girl is musical, and costs only about 1s 6d.

## WHAT TO GIVE A MAN

Next on our list comes father. Men are not so easy to cater for, for after we have thought of pipe-stands, slippers, ash-trays, and tobacco-boxes, there seems to be very little left. Suppose we buy a little spill-vase in blue and white china for 1s, and make about a hundred paper spills to fill it by cutting off the white edges of old newspapers and folding these quite tight. A basket-work wastepaper-basket—quite a good one can be bought for 2s 6d—or a 1s paper-knife might be appreciated.

# A FRENCH LESSON IN PICTURE: THE NAMES OF FAMILIAR THINGS IN A SCHOOLROOM



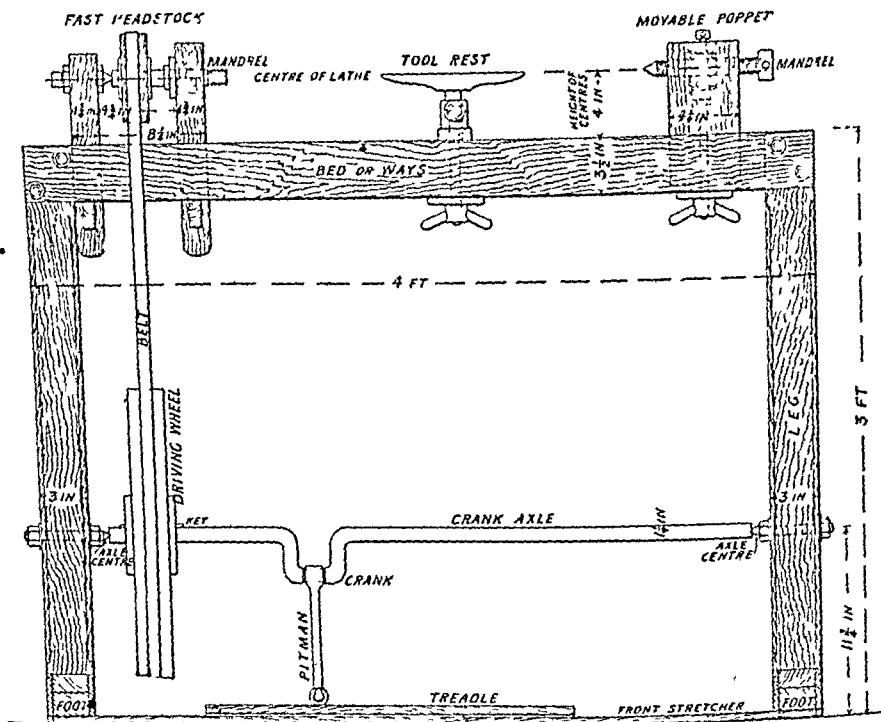
This picture enables us to learn easily the French names for the familiar things in a schoolroom. Reading from the left, we have the books in their book-case, the microscope and a piece of chalk resting on the table, and the blackboard supported on the easel by the pegs. The duster and the wastepaper-basket are below. On the wall hangs a map of England, in front of which the master in his robe stands at his desk on the platform holding the pointer. The pupils sit on the bench, with copy-books before them on the desk, in front of which are the cylinder and pyramid for a drawing-lesson. To their right is a cupboard with the hinges of the door indicated, and behind them hangs a picture in its frame to the left of the window, with its panes of glass.

# HOW TO BUILD A BOY'S LATHE

A LATHE is a machine in which pieces of wood or metal are turned to circular shapes. Good lathes are expensive if purchased, because they are made wholly of metal, and are produced very accurately. Consequently many lads who would wish to possess one are unable to save enough money to do so. With the exercise of a little skill, some slight help, and a small outlay, many of us will be able to construct a very simple lathe in which most kinds of plain turning can be done just as well as in one built more expensively by an engineer. The lathe is shown in pictures 1, 2, and 3, and its separated parts subsequently. We shall see that it is cheapened and rendered easy of construction by being made mostly of wood.

the legs, or uprights, each of which is made for simplicity of one solid piece of plank, or any one of the woods just named as being suitable for the bed. Each is cut either from a common deal or hardwood plank measuring 9 inches wide by 3 inches thick in the sawn sizes, and cut off to 3 feet in length. The pieces must be smoothed over with a plane, and the sides cut tapered as seen in picture 2, running from 9 inches wide at the bottom to 6 inches wide at the top.

The dimensions thus far are not very important, but those now to be noted are. The top of each leg has to be shouldered to receive the bed-ways, and the bottom of each has to be tenoned into its foot. These and other dimensions are marked from a centre



1 An easily-made foot-lathe for a boy, showing all the different working parts

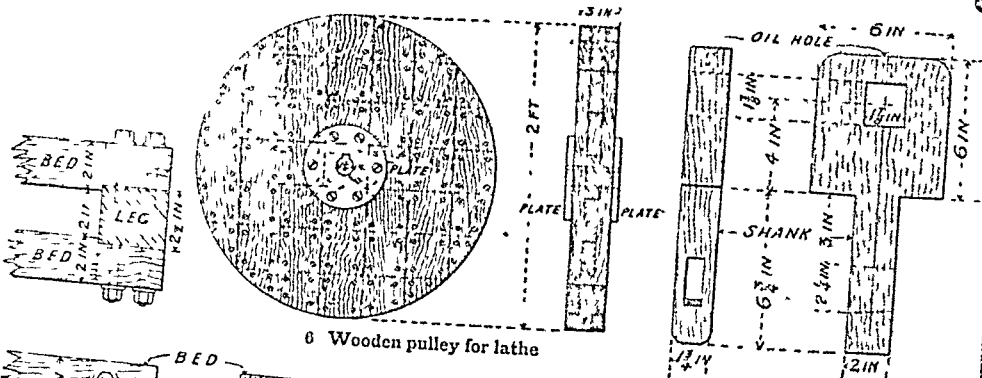
The very few portions which are of iron may be readily obtained. Anyone attempting to make the lathe should be familiar with the methods of jointing wood explained on pages 1315 and 1346.

The working parts are placed on supports termed the *bed*, or bed-ways, which are carried on the *legs*, also called uprights, or standards. The bed-ways are made of two strips of deal, or beech, birch, mahogany, or oak, well seasoned and free from knots and flaws. Each measures 4 feet long by 2 inches wide by 3 1/2 inches deep. These must be planed lengthwise truly on each side, and each adjacent side must be quite square with its fellow. If we cannot use the plane well, some carpenter will do this work for us in half an hour. These ways are fastened to

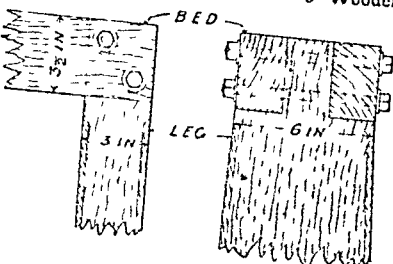
line, and not from an edge. This is important. The bed must be fastened securely to the legs. The best plan is to saw shoulders out of the legs at the top, as shown in pictures 2 and 4, and shoulder the ends of the bed-strips also. Then two 3/8-inch bolts at each end will be driven through holes bored through bed-strips and uprights.

At the bottom the legs are tenoned into the feet, as seen in picture 5. Two tenons are cut on the lower ends of the legs, and mortises to correspond in the feet. Observe that the mortises are wider than the tenons at the bottom end. This is to permit of the insertion of the wedges shown, to be driven in when the tenons are being glued. Picture 5 shows the appearance of the joint when made thus, before the ends are

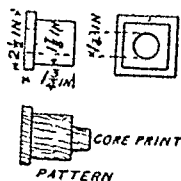




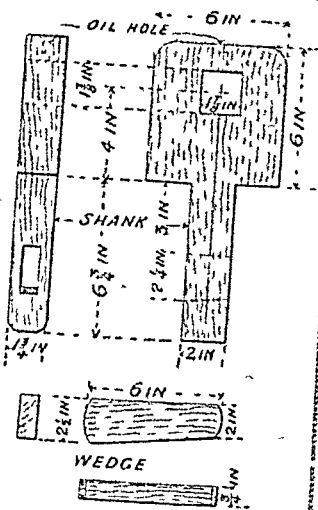
6 Wooden pulley for lathe



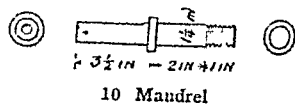
4 Method of jointing leg



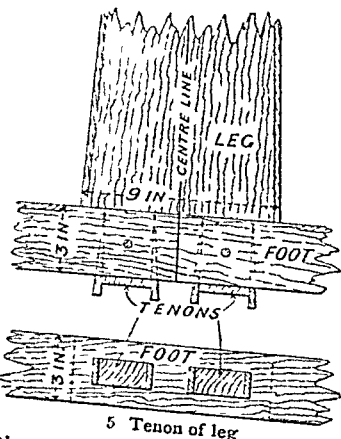
9. Mandrel bearing



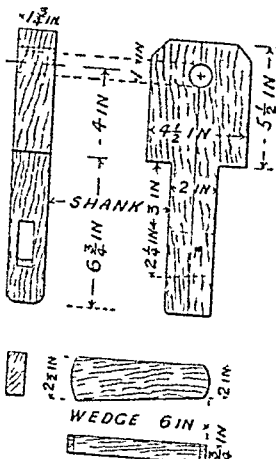
7 Headstock of lathe



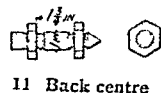
10 Mandrel



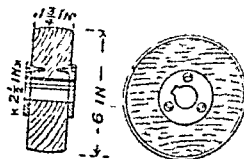
5 Tenon of leg



8 Headstock of lathe



11 Back centre



12 Pulley

the momentum acquired by the heavy wheel. The method of framing the treadle is not by tenons, but by means of half-lapped joints with dovetailed ends, as seen in picture 3. This is rather easier than tenoning. The joints are sawn and planed—using a rebate plane—then glued and screwed. The straps or the hinges cover over the hinder joints where the most severe strain comes. This treadle should be made of hardwood, preferably oak. We can purchase the pitman to forge one. This completes the framing of the lathe, leaving the headstocks and tool-rest still to be done.

On the strong and stiff framing which we have just seen how to make, the actual apparatus for turning has to be fitted. This, as shown in the pictures, is so extremely simple that we should try not to think that it is like the lathes made for sale. It is

designed so very simply that most lads may construct it with little assistance. But lathes very much like this may be seen in some of the old wood-turner's shops, and good work is done with them.

We shall begin with the upper fittings on the bed, making references first to pictures 1 and 2. These comprise the fast headstock to the left, the movable poppet to the right, and the tool-rest between. The first drives the work, the second supports the right-hand end of long pieces of work, and the cutting-tool is laid upon the third.

The headstock, seen in picture 1, is built of two pieces of any hardwood—beech, birch, or oak—cut and shaped to the dimensions given. Two uprights, seen in pictures 7 and 8, are shouldered at the bottom to fit between the ways of the bed. The tails or shanks project far enough downwards to allow room for cutting mortises and fitting

mandrel-screw were pinched by the end of the screw, it would soon become blunted. The nut is fitted in the head, and secured to it by means of two little flanges, through which wood screws are run into the head.

The movable poppet might be wedged down upon the bed similarly to the head-stock. But the constant shifting about to which it is subjected renders another method of clamping desirable, that, namely, of a screw and wing-nut, as shown in picture 16. A common bolt has its head sunk into a recess cut in the block, seen in picture 13, a little way below the nut recess, and its body is passed through a hole bored down the centre and projecting below the bed-checks. Over this a washer fits large enough to bridge the checks, and a wing-nut below pinches the head down. An ironmonger could supply these parts.

The *tool rest*, seen in picture 17, must be made of iron, cast from patterns shown in pictures 18 and 19, one for the *socket*, the other for the *tee*, which is the actual rest. We should be able to make the patterns by following the drawings. The pattern in picture 18 in plan is cut like the socket seen to the left, and the boss for the screw is fitted loosely with a wire. Then some metal-worker will fit a screw to the socket for pinching the tee-rest in any required position, and one for holding the foot down to the bed. Three chucks will be required, a fork, a

face-plate, and a cup-chuck, all as shown in pictures 20, 21, and 22 respectively. The first is for holding and driving work between centres, the second for large, thin pieces supported by the fast headstock mandrel only, the third for pieces which are neither large nor long, supported as in the last case. These are all screwed on the nose of the mandrel, and interchange. Picture 20 must be made by a metal-turner, 21 and 22 are cast from patterns similar to the castings, and either in brass or iron, but they have to be screwed by a turner, when the chucks can be turned up truly in their places.

The prong, or fork, of the chuck, seen in picture 20, is driven into one end of the piece of wood which it has to rotate, the fork affording the necessary leverage. All work which exceeds a few inches in length is driven thus, the further end being supported on the mandrel centre of the movable poppet.

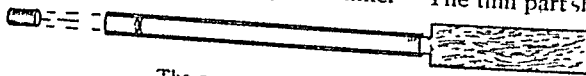
One face-plate, picture 21, is shown. The screw in the centre holds very small pieces. Larger pieces must be secured with wood screws put in from the back through the holes.

The bell or cup chuck, seen in picture 22, receives short pieces of work which have to be turned or bored out on the front end. The wood is driven into it with a hammer, and is thus held without any further assistance.

A leather belt  $\frac{1}{2}$  inch or 1 inch wide will be required to drive the lathe. It can be obtained at a saddler's or leather goods shop.

## A POPGUN MADE FROM A QUILL

A quill popgun is an amusing little toy that any boy can make without expense. All that is needed is a good quill of fair size that we can make from a goose-feather by pushing out the pith. We cut the quill evenly at each end, and make it about



The popgun made from a quill

three inches long. Now we take a raw potato, and cut it into slices about a quarter of an inch thick or a little more. We push one end of the quill through one of the slices of potato, and this will cause a piece of potato to stick in one end of the quill. Then we push the other end

of the quill through a slice of potato, thereby getting a piece of potato at that end also. Now we make a piece of wood as shown in the picture. This is to act as the rammer. The thin part should be almost the

size of the quill, and the thick end is to prevent it from going too far through the quill.

Then, by pushing this rammer into one end of the quill, we can fire our popgun, which we can load as often as we wish by pushing the empty end into a slice of potato. The quill popgun makes very good amusement.

## ANSWERS TO THE PICTURE

ON page 4766 we have a picture of a street scene in which the artist has purposely drawn many things wrongly. The observant reader will notice the following mistakes.

- 1 The lamp post should stand on the pavement, and its ladder-arm is in the wrong position.
- 2 The notice of "Keep to the left" should be on the other side of the lamp-post.
- 3 The pavement has no curbstones.
- 4 The bars of the gutter grating are the wrong way up, and they should also be at right angles instead of parallel to pavement.
- 5 The cyclist's front forks are wrong.

## ANSWERS TO THE PUZZLE

UPON page 4774 appears a natural history puzzle game in which seven well-known things are described, and these are the

## PUZZLES ON PAGE 4766

- 6 The trolley's handles are also the wrong way round.
- 7 The motor-car is not only on the wrong side of the road, but the handle of its door and its taximeter are in their wrong positions, and the licence number is in its wrong place.
- 8 One of the window-sashes on the first floor of the middle shop is wrongly placed.
- 9 The words "To Let" are made to read from the inside instead of the outside.
- 10 In the right-hand corner of the picture the end of the hand-rail on each side of the steps curls the wrong way round.

## GAME ON PAGE 4774

- names of the various articles referred to:
- 1 The common sweet chestnut, 2 Herrings,
  - 3 Tea, 4 Silk, 5 Oats, 6 Honey, 7 Apples

For the whole window from the eight panes in the top sash to the eight panes in the lower sash was frosted over in a thick and glittering iciness which not only caught the starlight outside at a thousand tiny points but expressed a wonderful design full of beauty.

As I stood there all of a sudden up came a blast of cold air from the lower sash and into the room sprang a wisp of a man with a very white face and a very blue nose.

"Name of Frost," he said in a sharp voice. "Jack Frost. Address, Icicle Villa, Snow Place, North Pole. Trade, plumber, glazier, and decorator."

I at once hopped under the bed-clothes and then said to my visitor:

"It gives me the greatest pleasure to make your acquaintance. I have heard of you before."

"I suppose so, but you know nothing about me. You do not know that I live near the North Pole in a neat little shop with two steps down from the pavement to the front door, two dormer windows in the tiled roof, and with a splendid design over the front, announcing Jack Frost, Plumber and Glazier."

In answer to this I ventured to reply:

"I know you are clever in turning water into ice, giving people colds, and making clouds come down as snow, but as to whether you are married, whether you are a Liberal or a Conservative—on these things I am ignorant."

He crossed his legs and said sharply:

"I am an artist. In point of fact, I am the greatest artist on earth. And it is far from encouraging to find that people do not recognise me as such."

"You should put R.A. after your name. That is the only means of knowing an artist in England."

"You're laughing at me!" said he.

"My dear fellow, my truth notwithstanding, I was never further from the truth in all my life."

"Look here. I'll explain how things are. You had better be quick. You know the season is over, it is autumn

after the leaves are down? You know how sodden the lawns look, how bare the trees look, and how muddy and sloppy and disagreeable the roads are? Well, those are my materials. At the worst season of the year I am sent for by Nature, and told to do the best I can with bare trees, sodden grass, and muddy roads. And just because I happen to burst a few water-pipes, and bring one or two gouty old gentlemen down on a slide, and set a few thousands of weaklings sneezing—I am abused by men and women, and not a single soul even praises my beautiful pictures!"

"Oh come, now!" said I, "I've heard people praise a good white frost—"

"Bah! Have you ever heard of anyone sitting up at night to watch me cover a whole window with beauty? Why, man, it's the most glorious and difficult art in the world, covering a window. You look at this one when you get up in the morning. Look at all its stars and mazes and little white leaves. Look at them under a magnifying glass. And then, glass and trees, and paths and roads—all in one night—decorated as if a king was coming, decorated as no man and no army of men could do it, and nobody ever watching how it's done! When I'm at work, *all the world's asleep!*"

"I shall certainly sit up to-morrow night."

"But, mind you, you must look out that Tom Thaw doesn't come instead of me. Thaw's a low fellow."

He sprang up, suddenly exclaiming: "I believe he's stirring now! I think I hear him! Good-night, my friend! And, flinging open the window, he vanished into the night."

In the morning I saw how beautiful was his work. Every tree sparkled with a pure glory. The whole wide world glistered under a white veil of exquisite loveliness, and the windows of the town were crusted with beauty, each pane a picture showing the real landscape and wonderful touch of Master Jack Frost.

Most Familiar Things are in the world.



# THE MAGIC TOUCH OF THE FROZEN DEW

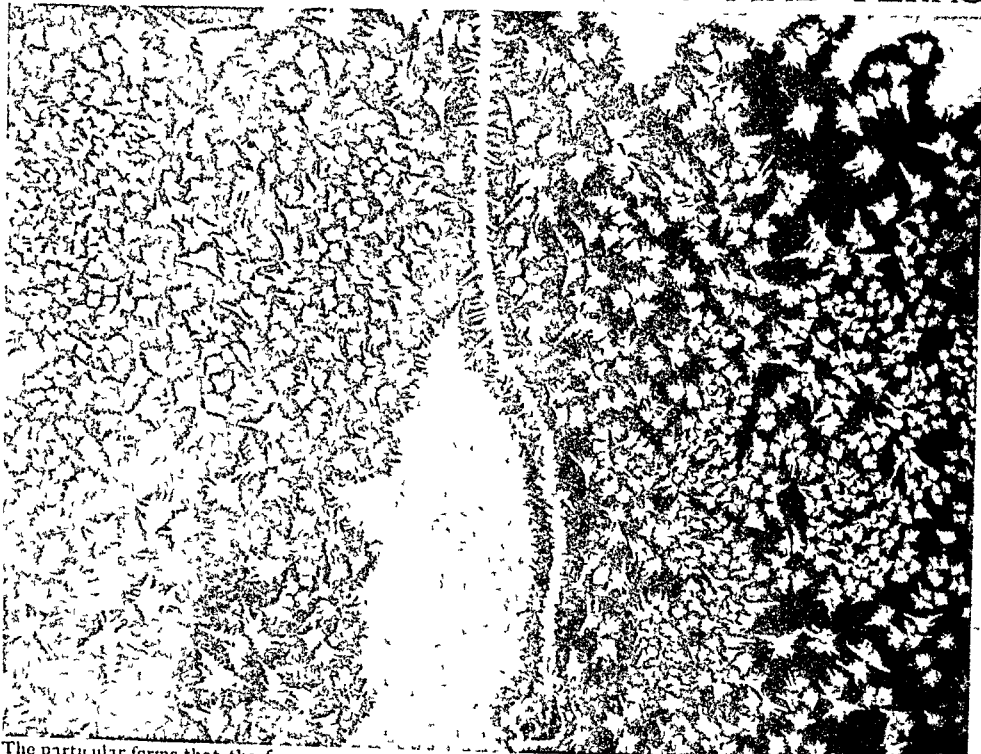


The spruce fir the Christmas-tree of our nurseries, is always graceful to look upon, but when every branchlet and needle is covered with the glistening crystals of frozen ice, the tree becomes a vision of loveliness

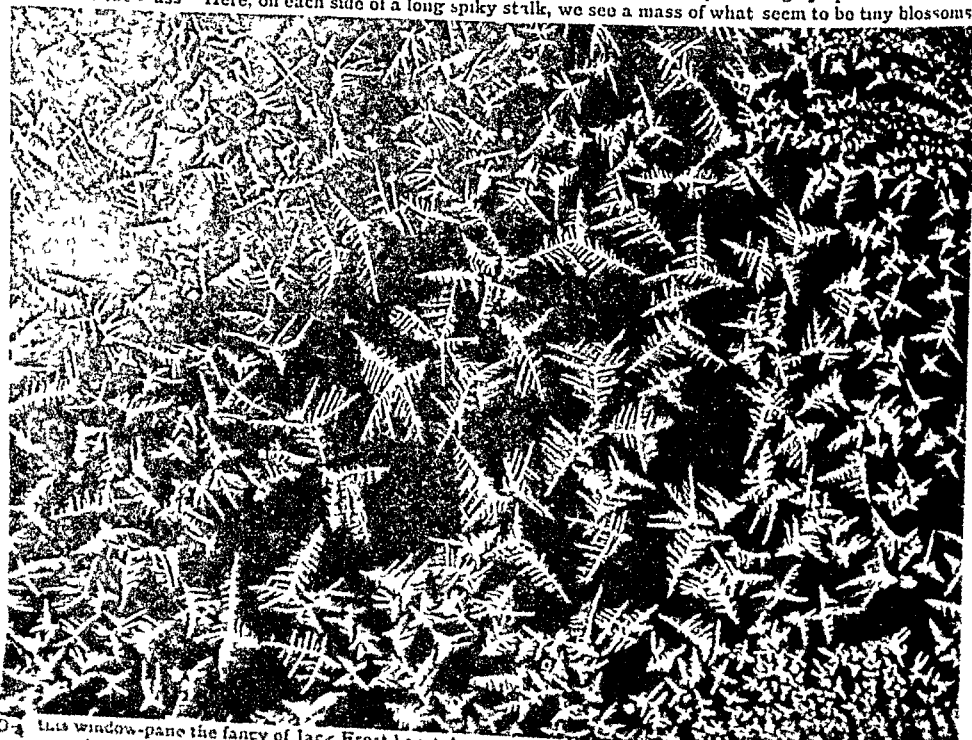


After a slight hour frost we may easily trace the veins and margins of every leaf by the fantastic fringes of silvery white crystals that settle on these hard parts of the leaf, while the softer, warmer parts are merely wet

# FROST PICTURES OF FLOWERS AND FERNS



The particular forms that the frozen moisture on the window-pane assumes depend largely upon the currents of air near the glass. Here, on each side of a long spiky stalk, we see a mass of what seem to be tiny blossoms.



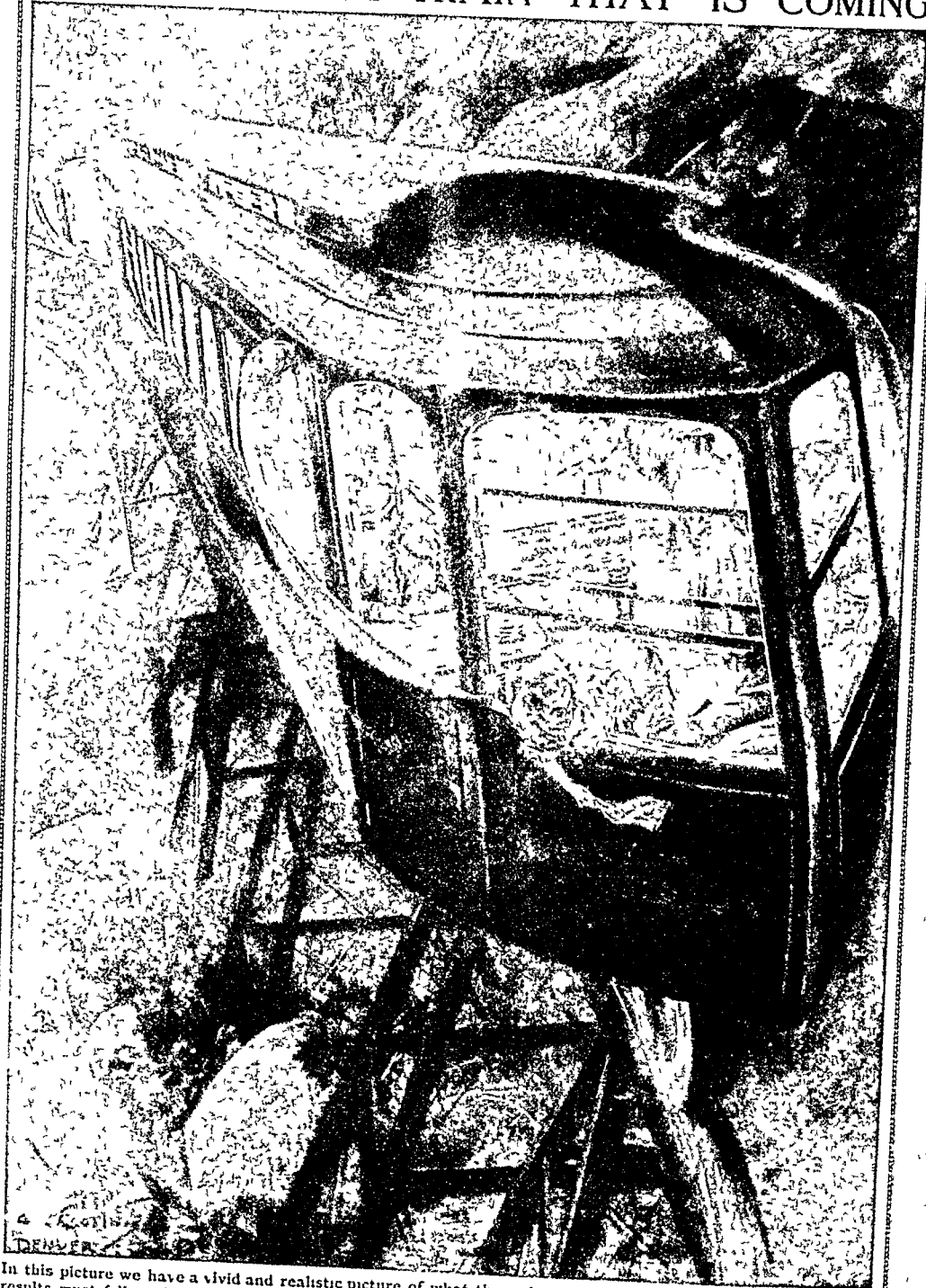
On this window-pane the fancy of Jack Frost has taken another, though similar, direction to that shown in the picture above, and we have a wonderful collection of dainty little fern-leaves, varying in size and shape.

## A PYRAMID OF SILVERY FEATHERS



There is nothing commonplace about hoar-frost. It covers all the trees and plants with its jewelled mail of dazzling white and yet in no two cases is the result the same. Snow may cover the face of the earth till all things wear a uniform dress, but not so the frost. This cedar, like a pyramid of silvery feathers shuning in the morning sun was photographed in the garden of the Editor, as were all the trees in these pages.

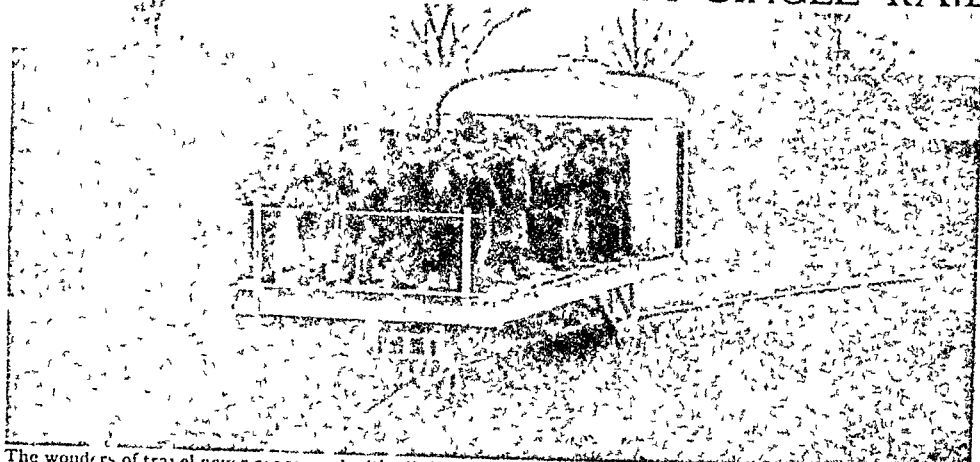
# THE WONDERFUL TRAIN THAT IS COMING



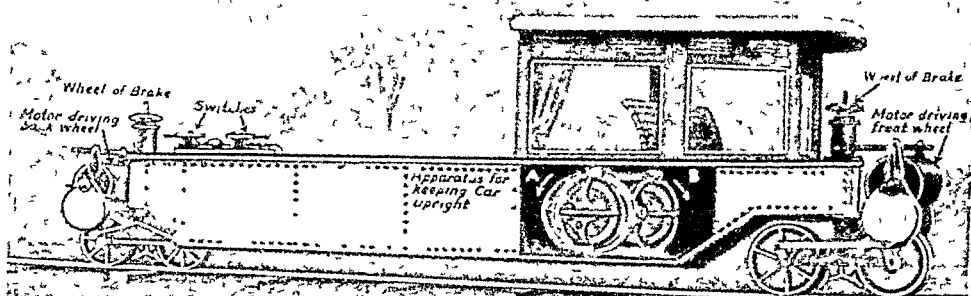
In this picture we have a vivid and realistic picture of what the railway of the future will be like. Remarkable results must follow the invention of the "gyroscope" train, which is the application to the railway of that interesting toy, the gyroscope, which all boys know is the most wonderful of toys. Exhaustive experiments have already been made with a large car, and the "gyro-car," that runs on a single rail, has fulfilled all that its inventor expected of it and claimed for it. Not only will enormous speeds be reached by trains of this kind, but the gyroscopes will keep the train so steady that we shall be able to write while travelling, or even to play billiards.



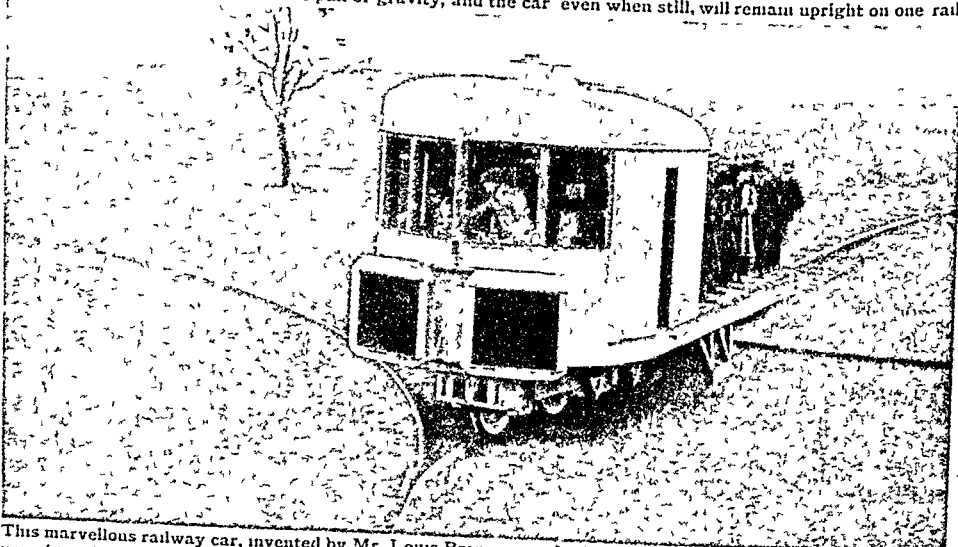
# A TRAIN THAT RUNS ON A SINGLE RAIL



The wonders of travel never cease, and with all the advances that have been made in recent years, still greater marvels are in store for us. It is probable that before long we shall be able to travel at a speed of 150 or 200 miles an hour in a train that will run on a mono-rail—that is, a single rail instead of a pair of lines. In this picture we see a mono-rail car, recently invented, which is the most wonderful vehicle ever made by man.



This picture shows us the principle of the mono-rail car in the picture above, which is called a gyro-car, because it is fitted with two gyroscopes, A and B, like those toy tops that spin in all positions. The centrifugal force of the whirling tops counteracts the pull of gravity, and the car even when still, will remain upright on one rail.



This marvellous railway car, invented by Mr. Louis Brennan, an Irishman, carries forty people, and will remain upright and steady on a single rail, whether it be travelling or standing still. The gyroscopes that keep it upright make 3,000 revolutions a minute, and will go on spinning for two days after the driving power is cut off.



pedalling, if we have first put power into it by pushing or pedalling, and it will continue to move until its power has been spent on the resistance of the air, in the friction against the road, and in the friction of the wheels upon their bearings. In this case the power we put into the bicycle is used up by being changed almost entirely into heat. The air is made hotter, and the road upon which the bicycle runs and the tyres are made hotter, and so are the bearings of the wheels.

Lastly, a bicycle may move without pedalling because it is a motor-bicycle. Here, also, the laws of energy and of motion are obeyed. The power of the bicycle's motion has to come from somewhere, and if it does not come from our legs pedalling, it must come from the action, or pedalling, as it really is, of countless millions of atoms of gas, made by the explosion in the engine of the motor, and pushing against the movable wall of the place where they are made. There is no very real difference between the tiny thrust of each of these atoms and the thrust of our legs as we pedal a bicycle in the ordinary way.

**WHY WILL A SLATE PENCIL WRITE ON SLATE BUT NOT ON PAPER?**

The kind of pencil that we use to write on slate writes simply because the slate is hard enough to rub it down when it is pressed. Paper is not hard enough to do this, if we press very hard we only tear the paper. We not only require hardness, but also a certain degree of roughness, to enable us to write. Neither an ordinary pencil nor a slate pencil will write on glass, because the glass is so smooth that there is not friction enough to rub off the tip of the pencil as we move it.

**WHY WILL A PEN AND INK WRITE ON PAPER BETTER THAN ON A SLATE?**

The principle of writing with a pen and ink is quite different from that of writing with a pencil, because here we are using a fluid, and what we want is a surface which will readily absorb a small quantity of the fluid as we write, but not too much of it; and writing-paper does this very well, though blotting-paper is too highly absorbent, and so does not allow us to write clearly. But a slate and a surface of glass are not absorbent at all and as a rule, the ink runs very slowly from the pen

because there is nothing to draw it, and it is held by the pen almost as well as if we were just hanging the pen in the air. But paper, being absorbent, is full of tiny pores, and these draw the ink out of the pen in just the same way as a sponge will suck up water.

**WHY IS THE AIR ALWAYS SO HOT BEFORE THUNDER?**

As a matter of fact, the air is not always hot before thunder, but it almost always has a way of *feeling* hot, and the whole point lies in the difference between these two things. We judge of the warmth of what is around us by the warmth of our skin, in which lie the sensitive ends of the nerves that tell us of heat and cold. And the reason why we always think it so hot before thunder is that our skins are so very apt to get hot at such times.

Before a thunderstorm the air is almost always loaded with moisture. Now, this means, naturally enough, that it is very slow to take up any more moisture, and our skins, which are always producing water—for we perspire all the time, whether we notice it or not—find that they cannot get rid of it to the air as quickly as usual, and we say “How muggy and close it is!”

Now, one of the great means by which the skin and the body are kept cool, though we are always producing so much heat in ourselves, is by the evaporation into the air of the water from our skins. If this process is slowed, the skin gets uncomfortably hot.

After the storm, when the water has mostly fallen out of the air, the atmosphere can readily hold what the skin desires to part with, and then we say “How delightfully fresh it is!”

**HOW CAN WE JUDGE DISTANCE?**

Mainly we judge by experience. For instance, a square box, as seen by us, is made up of lines running at various angles. This is true when we look at it, and a picture of it simply copies the direction of these lines. If we did not know that that was what a square box looked like, we could not tell its shape. A small child, who has no experience, is quite unable to tell.

A very young child, just beginning to observe, cannot tell distance, either in a picture or in a real thing, because it has not yet learnt that lines running in certain directions mean this or that.

is If it is anything at all like what it appears to be, there is no reason why, when we are looking at one side of it, other people should not be looking at the other side—just as if it were, say, the arch of a railway bridge. But it is absolutely impossible that anyone can be seeing the other side of the rainbow that we see.

What we call the rainbow is made by the reflection of sunlight from drops of water in the sky. Therefore, to begin with, the rainbow can only appear to us on the opposite side of us to the sun. Anyone trying to look at the other side of the rainbow would be looking towards the sun, where, owing to the very nature of a rainbow, one can never be seen. Now, if a rainbow is formed by the reflection of light from drops of water suspended in the sky, that are so placed as to have our eyes between them and the sun, plainly there can be no other side to the rainbow.

#### WHY DO OUR VOICES SOUND HOLLOW IN AN EMPTY HALL?

We can almost guess the right answer to this question for ourselves if we begin by asking ourselves why we use the word "hollow" to express the sound of our voices in such a case as this. The truth is that this is the kind of sound that is produced within any hollow or more or less rounded space, and, by a rather absurd use of language, we call the kind of sound produced in a hollow space a hollow sound.

Now, we must ask what it is that gives this character to the sound. It is that the sound is reflected back from the sides of the space where it finds itself, and it is this echoed quality that distinguishes it.

Exactly the same thing makes the difference between our voices on the level in the open air and in an empty room or hall. The reason why furniture and people and hangings help so much to deaden the sound in a room is that these things either have very irregular surfaces, which break up the sound waves and do not reflect them truly, or else they are made of materials which are soft and not elastic, and therefore simply absorb the sound and deaden it.

#### WHY DOES MY VOICE SEEM LOUDER WHEN I PUT MY HANDS OVER MY EARS?

We can help ourselves to answer this question if we consider the case of a sea-shell held over the ear. There is no

sound made in the shell, but it picks up all the tiny sounds that are made in the room, and echoes them to the ear. Our hands held over our ears act in exactly the same way. They echo the sounds just as the shell does.

But it is true that the special case where the voice is our own is rather different from other cases. Perhaps we are rather apt to think of sound as something that always flies "forward" from the place where it is made. But, just like the light of a candle, sound flies out equally in all directions, except in so far as special causes direct the waves or echo them.

So the sound made by our voices travels round 'beside our ears, and is caught and echoed into them by our hands. Not only do our voices sound louder, but they also sound very strange to us. This is because we usually hear our voices partly through the air waves coming against our ears, and partly by sound waves travelling through the head to the ears from the voice-box. Anything that alters the proportion of these two seems to change the voice.

#### WHY DO OUR HANDS BECOME 'WARM' AFTER PLAYING WITH SNOW?

It is very wonderful that our hands should become warm after playing with snow, for it must be perfectly certain that the cold snow takes heat away very quickly from our warm hands.

The warmth of our hands is derived entirely from the blood, except at times when something hot is actually shining upon them. Therefore, for some reason or other, a very much larger amount of blood than usual must be flowing through our hands. The blood is no warmer in itself, or the whole of the body would at once notice it, but what really happens is that the hands are getting a richer and quicker supply of it.

The effect is just the same, really, as the delightful glow that we feel after a sea-bath. The brain has the duty of taking care of the skin, as of every other part of the body. Now, when the skin has been chilled, its life has been heavily taxed, and it will suffer unless it is compensated. So the brain orders the small blood-vessels in the skin, wherever it has been chilled, to relax and widen so that the warm blood is able to circulate quickly through them.

The air also catches a great deal of light which we are not able to see, and throws it back again to the sky.

If we go up high in a balloon and look down upon the earth, there is no question at all about its shining—the earth itself and the sea, and the upper sides of the clouds. Seen from a height, the deserts of the earth have a reddish glare which seems to be similar to the reddish glare which we get from the deserts of Mars.

(Of course, if we are in a balloon at a great height, we can only see the shining surface of the earth in the daytime with light all around us, but if we could see it from some great distance, we should realise how bright it is. So if we were on another planet at night-time, and we could see the side of the earth on which it was day we should see a bright ball in the sky. If we were looking from the moon, it would look just as bright as the moon looks to us now, and much larger.

#### WHY DOES NOT GRAVITATION PULL THE CLOUDS DOWN?

We may be quite certain that, as Newton declared from the first, gravitation applies to everything, near or far, small or great, and also that its action never halts or varies, but goes on always. Only we are constantly apt to fall into the mistake of supposing that gravitation, because it is universal and constant, is the only force in the world. But it is simply one of many forces, and it is not by any means strong compared with many forces that may be brought to oppose it.

Gravitation, then, does attract, and is always attracting, the clouds, and certainly, if no other forces were at work, they would fall instantly like a stone. Gravitation attracts downward a cork floating on water, but as it attracts the water still more than the cork, the cork floats, notwithstanding gravitation.

The clouds, also, are floating upon or in the ocean of air, and would drop at once if the air underneath them were taken away, just as the floating cork would immediately drop to the earth if the water were taken away. It is certain, also, though very little is known about this yet, that there are electrical forces at work in the air which must also help to form the clouds and keep them in their position.

#### WHY IS A WHITE MAN MORE CIVILISED THAN A BLACK MAN?

There are two distinct reasons, both equally important, why most white men are more civilised than most black men. The first is the very evident reason that, as no one really *makes* much civilisation for himself, we require to be born into a civilisation if we are to be civilised. Have we, for instance, invented even a single letter of the alphabet, let alone reading and writing?

This thing—civilisation—into which we are born, is a kind of heritage, or legacy, bequeathed to us by the united labours of all who have gone before us, and it is sometimes called the social heritage or social inheritance. When a black baby is born, and receives this heritage, he profits by it and becomes, at the least, much more civilised than if he had been born in the heart of an African forest.

But the difference in the social heritage is not the whole of the explanation of our question. There is the question of what the baby receives, in itself, from its parents, according to whether they belong to a high or a low race of mankind. We might call this the “natural inheritance.” Therefore, the answer to our question is that, in the two cases, the social and the natural inheritances are very different.

#### SHOULD WE LIKE ONE FRIEND MORE THAN ANOTHER?

Human life goes on best by each of us devoting most of his love and his powers to some few people, and certainly we ought to like one friend better than another, so long as we like that friend for the right thing. If one person has more love and tenderness and faithfulness and honour than another, we do wrong not to love him or her for these things more than we love someone else who has less of them.

It is right that love should be rewarded by love, and cheerfulness by cheerfulness. The very fact helps and encourages people to show their best side to the world, which would be scarcely worth while if people were just as fond of us whether we were kind or cruel.

One of the most important facts in our lives is that our qualities call forth the same qualities in other people. The loving mother makes loving children, and cruelty generally breeds cruelty.

The next Questions are on page 5015

every fresh soldier who came to share his fetters Paul told the story of Christ's life his own conversion, and, with that foreign soldier, discussed the ideas of Jesus—the ideas of kindness and love of goodness and self-sacrifice of a Father in heaven who cares for us and who desires us to be happy. Every word that he said was a seed destined to spread among a whole legion of the Roman army, in due time to bring forth a harvest in the farthest corners of the world.

#### THE PRISONER IN CHAINS WHOSE TALK CHANGED ALL THE WORLD

This great missionary, by far the greatest that the world has ever known, did his work at Rome by means of simple conversation. He talked to people and touched them with the spell of Jesus. He discussed the revelation of Jesus with the visitors who came to see him, and not only sapped the foundations of the mightiest empire in existence, but changed the world's history. The new page in human history was begun by a chained prisoner talking to his friends in a Roman lodging. Instead of sermons, we have conversations. Instead of creeds and a difficult theology, we have the simple influence of the character of Jesus.

But there was one great moment in Paul's life at this time. He was brought to trial, and, as some think, stood face to face with Nero himself. If this is indeed true, never was there a more dramatic meeting of two human forces.

Paul, old and bowed, would stand before Nero young and insolent, the old Paul standing for a new earth, while the young Nero represented the death of the old world. Paul had lived only for others. He was pure, he was tender, he was considerate, he loved righteousness, he was full of a manly contempt for all meanness, vileness, and sin.

#### THE WONDERFUL MOMENT WHEN PAUL MAY HAVE BEEN FACE TO FACE WITH NERO

Nero, on the other hand, was a vile and cruel monster, seeking and longing for fresh evil, destroying the lives of children, torturing men and women for his amusement. He was a tyrant, a murderer. It is impossible for men to read the history of Nero without being convinced that he was inhuman. Therefore, if indeed it was before Nero that Paul stood, we have truly one

of the most dramatic meetings in the world's history. We have man's desire for God face to face with man's desire for evil. We have religion face to face with atheism. We have the old world clothed in splendour and looking out of eyes of lust at the new world, with that new world fettered and bowed, but rejoicing in the eternal assurance of God's will, the sun of immortality shining on its brow.

From that trial in which Paul stood alone, deserted by all his friends, he emerged with a verdict of "not proven." He escaped death, to remain a prisoner.

The great fire which had destroyed so much of the glory of Rome, the fire which many ascribed to Nero himself, was laid by Nero's spies at the door of the despised Christians, the strange people who, they said, worshipped a crucified god in underground places and burying grounds.

The Christians were a hated sect, everywhere spoken against and distrusted. It seemed, even to virtuous Romans, that a new religion which exalted love and commanded compassion would surely ruin their glorious empire, resting as it did on the force of arms.

#### THE SCENE AT THE GATE OF ROME WHEN PAUL PASSED OUT OF THE WORLD

The Christians were, therefore, not merely hated by the evil and the wicked, but condemned by the thoughtful and the virtuous. It only needed the burning of Rome to light the fires of persecution for this hated sect.

Paul might escape for a little while, but his doom was certain. How it came, we do not know exactly. In the immense confusion of the fall of the Roman Empire, the death of St. Paul is lost as a little thing of no moment. It was only perceived long afterwards, in the resurrection of the world and in the birth of a new religion, that the poor, solitary, deserted, and fettered prisoner in his lodging at Rome had filled a greater place in the history of the world than the emperor on his throne. "God buries the workmen, but carries on their work."

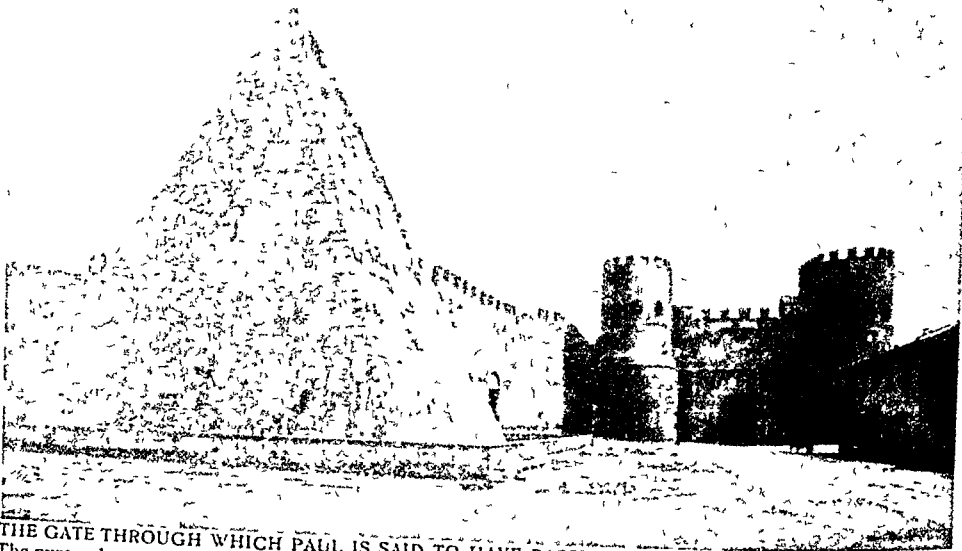
Dean Farrar has imagined for us in his "Life of St. Paul" the closing scene. "If any timid, disheartened, secret Christian stood listening in the crowded court—if through the rumed areas which marked the sites of what had once

been shops and palaces before the conflagration had swept like a raging storm through the narrow ill-built streets—if from the poorest purlieus of the Trastevere, or the gloomy haunts of the Catacombs, any converted slave or struggling Asiatic who believed in Jesus had ventured among the throng, no one has left a record, no one even told the story to his fellows so clearly as to leave behind him a floating tradition. We know nothing more. The last word has been spoken. The curtain has fallen on one of the noblest of lives.

They who will may follow him in imagination to the possible scene of his martyrdom, but every detail must be

of the apostles was shorn away." Here ends for us the life of a solitary man who occupies a place in history second only to the matchless glory of his Master. He was hated by the Jews, among the Christians of his own race he was distrusted, he was loved by but one man, the gracious and youthful Timothy, and he was weak and afflicted.

Nevertheless, it was Paul who died an unknown death of martyrdom, whose life-story is the story of Christianity passing out from the East to conquer the whole world. Those English missionaries who now carry Christianity to the East are carried, as it were, on the Pauline wave which rose in the East



THE GATE THROUGH WHICH PAUL IS SAID TO HAVE PASSED OUT OF ROME TO HIS EXECUTION  
The pyramid was standing at the time of Paul's death, and was probably the last view of the world seen by Paul

borrowed from the imagination alone. It may be that the legendary is also the real scene of his death. If so, accompanied by the centurion and the soldiers who were to see him executed, he left Rome by the gate now called by his name. . . . For nearly three miles the sad procession walked, and doubtless the dregs of the populace, who always delight in a scene of horror, gathered round them.

"About three miles from Rome, not far from the Ostian road, is a green and level spot, with low hills around it, known anciently as *Aquæ Salvæ*, and now as *Tre Fontane*. There the word of command to halt was given, the prisoner knelt down, the sword flashed, and the life of the greatest

and broke across Europe, shining with the Light of the World.

We who have now followed the story of St Paul from the beginning have followed the narrative of the greatest miracle in history. For the miracle of all miracles is the triumph of Christianity after Jesus Himself had suffered ignominious death. No man can explain how Christianity conquered the world, except by acknowledging that Paul was changed by a miracle, and was supported by God through his life of preaching to the Gentiles. We look back in history, and we see no man who has done a greater work for the world than this servant of Jesus, who interpreted his Master to all peoples and all generations.

The next Bible Stories are on page 5093

is produced what is called a free vibration. The string is disturbed for a moment and then the thing which disturbs it is removed, and the string vibrates freely for a greater or less time—a long time in the case of a piano, a short time in the case of a violin.

### WHAT THE TUNER DOES WHEN HE TUNES THE PIANO

In a piano, for instance, the strings are always meant to be played in this way, and everything is done to make the tones as rich in over-tones as possible, even though they belong to the class of free vibrations. A resonator is anything that gives back sympathetic vibrations to any particular tone, and helps to magnify the sound, as we read on page 3756. But quite apart from the question of resonators, the kind of string makes a great difference. We know that the pitch of a note depends upon the tightness of the string, which is what the tuner corrects when he tunes the piano, it depends also upon the mass of the string and upon its length.

Plainly, therefore, it should be possible to get one and the same note from a long thin string and from a short thick one, and this can actually be done, or, rather, it will be one and the same fundamental note in both cases, but there is a great difference when it comes to the question of over-tones. Then we find that, though the two strings produce the same fundamental note, it is a far more beautiful and richer note when it comes from a longer, thinner string than when it comes from a shorter, thicker one.

Everyone knows how utterly different is the sound of the bass notes of a good piano and the same notes of a cheap one. One of the chief differences is that the good piano uses longer wires for the low notes, and that is the reason why it takes up so much room.

### WHY A GOOD PIANO MAKES BETTER MUSIC THAN A BAD ONE

Yet two pianos that are of the same size may be very different in the quality of their lower notes, and when we open the pianos we find that in the better one the longer wires have been run at an angle across the shorter ones, and so greater length has been obtained. That is what is meant when it is said that a piano is over-strung, as all

but the cheapest pianos are nowadays. The point about over-stringing is to get length of string, and the point about length of string is that this is the best way of making low notes, as long, thin strings produce far more over-tones than short, thick ones.

It is very difficult to say exactly what happens when a string vibrates and produces over-tones. We know that, in the first place, the whole string is swinging from side to side, and then it seems that, on the top of that swing, so to speak, various sections of the string—as, for instance, just one-half of it, just one-quarter of it, and so on—are also making little swings of their own, each of a certain rate, according to the length of string that is swinging, and this is how the over-tones are made. This gives us some kind of idea why it is that in a very short, thick thing like a tuning-fork we get no over-tones, while from a long, stretched, slender string we get many.

### THE FIDDLE STRING THAT CAN BE MADE TO LAUGH OR CRY

When a string is bowed, it is made to vibrate in a different way, and in this case it vibrates only when the bow is being drawn across it, and stops immediately afterwards. It only vibrates when the bow forces it to, and so these are called forced vibrations, as distinguished from free vibrations. A string undergoing forced vibrations must really be one of the most wonderful things in the world, if we could only see what is really happening to it.

The difference between a great violinist and a poor one is about as great as can be, and this is true though the violins may be the same. The secret lies in the bowing of the great player. When he plays a single, long note, it is a single note, and yet it is many notes, he can make it cry or rejoice as he draws the bow across the string.

The reason is to be found in the extraordinary sensitiveness of a string undergoing forced vibration. Changes in what the bow does to the string, so minute that no one can describe them or define them, or say where they begin or end, or what they consist of, will utterly change the quality of the sound. The reason, of course, is that the string is vibrating in a different way, and so is producing a different set or a different

and we, as we tune our resonators every day, which we do, do not know what we are doing. Wonderful though other musical instruments are, and more especially the violin, which, in the hands of great masters, can be made almost human the voice really beats them all, and the reason is that no other instrument has ever been invented in which we can tune the resonators as we go along. As is the case with everything else in the universe, a resonator creates nothing. It only makes more conspicuous what is already there.

## THE WONDERFUL CORDS OF THE HUMAN VOICE

In our experiment with the piano, the soft chord we heard really came, in the first place, from the wire which we struck, and, similarly, all the over-tones of the human voice, whether in speaking or singing, are produced by the vocal cords. The marvellous richness in over-tones of the vibrations of the vocal cords is made yet more marvellous by the fact of their extreme shortness. The vocal cords of a bass singer—say, roughly, an inch long—may rival in number and richness of over-tones a violin string many inches long, or a piano string many feet long. Of course, the fact has to be remembered that the vibrations of the vocal cords are forced vibrations, and we know that, other things being equal, forced vibrations are always richer in over-tones than free vibrations. No instrument can make music so marvellous as that of the voice.

The chest and the cavities of the mouth and nose make the resonators for the voice, and these differ from all others in that they can be changed from moment to moment, and changed appropriately. For the lower notes the principal resonator is the chest, and its use is in reinforcing the lower over-tones. It does this best when it is well expanded, and therefore a singer produces far more resonant low notes when there is plenty of air in his lungs than when the air is nearly all expelled.

## A GREAT SINGER'S MARVELLOUS POWER OVER LANGUAGE

But all the different qualities of tone which decide what vowel the singer is singing, and, apart from that, control so much the quality of the voice and its effect upon our minds, are due to the higher over-tones. These are affected

by the upper resonators, the shape of which we can instantly control within such a wide range. From the practical point of view, the power of tuning our resonators is of the greatest importance, because it gives us the power of producing different vowels. Therefore, all the difference between the lowest types of human language, which practically consist of consonants only—we may almost say of nothing but clicks and snorts and coughs, if not sneezes—and the higher types of language, rich in vowel sounds, is due to the laws of resonators and the fact that we can tune our resonators as we please.

The good singer goes even farther. The good singer goes even farther than the highest language in this respect he does everything that the language does, and more. It is true that the bad singer often spoils the vowels of a language, and makes them all nearly alike. By so doing he prevents us from understanding the words he sings, and he also loses all the value of the variety in vowel tones.

## THE MANY THINGS THAT GO TO MAKE A GOOD SINGER

The good singer not only uses variety and makes the most of it, sounding his vowels much more purely than most of us do when we speak, but he also tunes his resonators from moment to moment, so as to make the tone cold or warm.

For this purpose he uses everything that is at his disposal for tuning his resonators. The extent to which the mouth is opened, the exact position of the lips, of the tongue, and of every part of the throat, from its roof downward—all these modify the tuning of the upper resonators, and are under the perfect and easy control of the great singer.

It is not by any means only stretched strings that produce over-tones. The same is true of pipes, such as the pipes of an organ, a flute, a clarinet, or a bassoon. These vary very much in their quality, and the variations are due to the differences in the over-tones. In each case the column of air in the pipe is not only vibrating as a whole from end to end, but also in sections, and thus the over-tones are produced.

For the sake of curiosity we may study the behaviour of such a thing as a plate. Many years ago, careful study was made of plates clamped in the middle and then made to vibrate by

## THE CHILD'S STORY OF THE EARTH

But we can make the phonograph record the waves corresponding to an orchestra or to any kind of sound, simple or complicated music or mere noise and the marks made upon the wax by the phonograph needle can be studied by means of the microscope, or they can be photographed and greatly magnified.

**THE FLAME THAT DIES WHEN WE SAY OO AND JUMPS WHEN WE SAY EE**

This makes one way in which we can study sound by turning it, so to speak, into something that can be seen. We saw this, also, in the case of the flames which were made to flicker when the resonators opposite them were thrown into action. Flames can be made extraordinarily sensitive to sounds, we cannot say that the flame hears the sound but it is somehow affected by the quality of the sound waves.

Professor Tyndall invented what he called a vowel flame, which, when nothing disturbs it, is about two feet high, but certain sounds will make it so short that it can scarcely be seen, and then, when the particular sound stops, up it will jump again. It is called a vowel flame because it can tell one vowel from another, so to speak. The flame is specially sensitive to high notes, and is therefore much more affected by vowels which are made by high over-tones than by those which have lower over-tones.

The highest pitched of the vowels is e. Anyone will agree with this who will whisper the various vowels all on the same note, and there will be no doubt that, though they are all on the same note, yet e is the highest of them all. The reason is that, though the fundamental note is the same for each of the vowels as we are whispering them, the over-tones of e are the highest. Now, if we say oo, as in boot, to the vowel flame, it will do very little, but if we say ee to it, as in feet, it will almost disappear. When we stop, it jumps up again.

**HOW MEN CAN WATCH A SOUND PLAYING WITH FIRE**

Sensitive flames can be used for more strictly scientific purposes. We have seen already that they can be made to show which of a set of resonators are being thrown into action by a certain sound. This test can be applied to the study of sounds, notably to the study of the vowel sounds, which are more numerous than may be supposed by

anyone who speaks only one language. When we learn French we all know how different some of the vowel sounds are, and really the total number of possible vowel sounds is very large. This is all a matter of over-tones, and they can be studied by speaking into a little machine in such a way as to affect a flame, and we can study the shape which the flame takes in different cases. In fact, we may say that we can actually watch a sound playing with fire! There is a likeness between the shape of the flame in such cases and the shapes of the marks which the same sounds will make on wax by means of the phonograph.

When a wave strikes a breakwater and comes back again and meets the next wave, the two will clash and interfere with each other. At times the two crests will come together and will make a very high crest, at other times the crest of one wave will meet the trough of another, and each will tend to spoil the other. This effect of one wave on another is called interference, and it is true of all kinds of waves—water waves, sound waves, even the ether waves that make light.

**WHAT WE CAN LEARN BY THROWING A STONE INTO A POND**

If the sea and a breakwater are not convenient, we can study interference in a small way by throwing two stones into a pond, and seeing what the one set of waves does to the other.

Interference in sound waves produces a most interesting result. It means that if we have two notes sounding together that are very near in pitch, but not the same, the waves will interfere with each other, and we shall get what are called beats, the sound will seem to throb or beat. When the two waves are helping each other, the sound gets louder; when they are spoiling each other the sound is fainter. This beat is very unpleasant.

Part of the objection to what we call discord is that the waves which are being made by the various notes are capable of interfering with each other, and so we get beats or throbs. But different people vary very much as to what they find nice in the way of discords, and the right use of certain discords in music is invaluable because it so enormously increases the effect of the harmony upon our ears.

The next part of this is on page 5039



## THE CHILD'S BOOK OF POETRY.

### A DAISY AT CHRISTMAS

James Montgomery, who wrote these pleasant verses on the daisy after finding one in bloom on a Christmas Day, was a poet of some note in the first half of last century. He was born in Scotland in 1771, but lived most of his life in England, being the editor of a journal at Sheffield, where he died in 1854.

THERE is a flower, a little flower,  
With silver crest and golden eye,  
That welcomes every changing hour  
And weathers every sky  
The prouder beauties of the field  
In gay but quick succession shine,  
Race after race their honours yield,  
They flourish and decline  
But this small flower, to Nature dear,  
While moon and stars their courses run,  
Enwrathes the circle of the year,  
Companion of the sun  
It smiles upon the lap of May,  
To sultry August spreads its charm,  
Lights pale October on his way,  
And twines December's arm  
The purple heath and golden broom,  
On moory mountains catch the gale,  
O'er lawns the lily sheds perfume,  
The violet in the vale  
But this bold floweret climbs the hill,  
Hides in the forest, haunts the glen,  
Plays on the margin of the rill,  
Peeps round the fox's den  
Within the garden's cultured round  
It shares the sweet carnation's bed,  
And blooms on consecrated ground  
In honour of the dead  
The lambkin crops its crimson gem,  
The wild bee murmurs on its breast,  
The blue fly bends its pensile stem  
Light o'er the skylark's nest  
'Tis Flora's page—in every place,  
In every season, fresh and fair,  
It opens with perennial grace,  
And blossoms everywhere  
On waste and woodland, rock and plain,  
The humble buds unheeded rise,  
The rose has but a summer reign,  
The daisy never dies!

### THE DAY IS DONE

Few of the shorter poems written by Longfellow are more deservedly popular than the following, which has hardly a verse that does not contain some rare beauty of poetic thought and expression. The longing for quiet and peace at the end of a strenuous day has never been better conveyed in poetic form, and the pure pleasures of a good man's domestic life are here celebrated in the worthiest verse. The last stanza of the poem is a favourite quotation.

THE day is done, and the darkness  
Falls from the wings of Night,  
As a feather is wafted downward  
From an eagle in his flight  
I see the lights of the village  
Gleam through the rain and the mist,  
And a feeling of sadness comes o'er me  
That my soul cannot resist  
A feeling of sadness and longing,  
That is not akin to pain,  
And resembles sorrow only  
As the mist resembles the rain  
Come, read to me some poem,  
Some simple and heart-felt lay,  
That shall soothe this restless feeling,  
And banish the thoughts of day

Not from the grand old masters,  
Not from the bards sublime,  
Whose distant footsteps echo  
Through the corridors of Time  
For, like strains of martial music,  
Their mighty thoughts suggest  
Life's endless toil and endeavour,  
And to-night I long for rest  
Read from some humbler poet,  
Whose songs gushed from his heart,  
As showers from the clouds of summer,  
Or tears from the eyelids start,  
Who, through long days of labour,  
And nights devoid of ease,  
Still heard in his soul the music  
Of wonderful melodies  
Such songs have power to quiet  
The restless pulse of care,  
And come like the benediction  
That follows after prayer  
Then read from the treasured volume  
The poem of thy choice,  
And lend to the rhyme of the poet  
The beauty of thy voice  
And the night shall be filled with music,  
And the cares that infest the day  
Shall fold their tents, like the Arabs,  
And as silently steal away

### ALADDIN

James Russell Lowell, the famous American poet, puts a great deal of thought into these sixteen lines. Quite a long essay, almost a book, might be written to show that the beautiful dreams of youth are worth far more than all the gold one has gathered in old age. But nothing more could be said than is here conveyed, and that is the glory of the poet to be able to put the pith of a long sermon into a few lines that will live for ever in our memory. There is no higher art.

WHEN I was a beggarly boy,  
And lived in a cellar damp,  
I had not a friend nor a toy,  
But I had Aladdin's lamp,  
When I could not sleep for cold,  
I had fire enough in my brain,  
And builded, with roofs of gold,  
My beautiful castles in Spain!

Since then I have toiled day and night,  
I have money and power good store,  
But I'd give all my lamps of silver bright,  
For the one that is mine no more,  
Take, Fortune, whatever you choose—  
You gave, and may snatch again,  
I have nothing 'twould pain me to lose,  
For I own no more castles in Spain!

### INSCRIPTION ON A SILVER PLATE

These lines, written by Eugene Field for his little son, may be read with profit by many who are fathers of families. For, after all, the most necessary lessons in life and conduct require much repetition, and most of us will find much in "poems for children" which applies quite as well to grown ups.

WHEN thou dost eat from off this plate,  
I charge thee be thou temperate,  
Unto thine elders at the board  
Do thou sweet reverence accord,  
And, though to dignity inclined,  
Unto the serving-folk be kind,  
Be ever mindful to the poor,  
Nor turn them hungry from the door;  
And unto God, for health and food  
And all that in thy life is good,  
Give thou thy heart in gratitude

# LITTLE VERSES FOR VERY LITTLE PEOPLE

CHRISTMAS is coming, the geese are  
getting fat  
Please to put a penny in an old man's  
hat  
If you haven't got a penny, a ha'penny  
will do  
If you haven't got a ha'penny, God  
bless you



A BUTTERFLY peched on a mossy  
brown stile,  
And a little maid saw him and cried  
with a smile.  
"O beautiful butterfly, yellow and blue,  
Stop, stop, let me sit on the stile with  
you!"  
But the beautiful butterfly, yellow and  
blue,  
Opened his wings and away he flew;  
And when he'll return I really can't say,  
But the little maid sits on the stile to  
this day!

A KISS when I wake in the morning,  
A kiss when I go to bed,  
A kiss when I burn my fingers,  
A kiss when I bump my head

A kiss when my bath is over,  
A kiss when my bath begins;  
My mamma is as full of kisses  
As nurse is full of pins.

A kiss when I play with my rattle,  
A kiss when I pull her hair,  
She covered me over with kisses  
The day that I fell downstairs

A kiss when I give her trouble,  
A kiss when I give her joy,  
There's nothing like mamma's kisses  
To her own little baby boy

HE was a rat, and she was a rat,  
And down in one hole they did  
dwell,  
And both were as black as a witch's  
cat,  
And they loved one another well

He had a tail, and she had a tail,  
Both long and slender and fine;  
And each said, "Yours is the finest  
tail  
In the world, excepting mine."

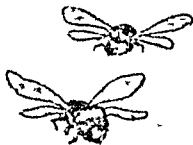
He smelt the cheese, and she smelt  
the cheese,  
And they both pronounced it good,  
And both remarked it would greatly  
add  
To the charms of their daily food

So he ventured out, and she ventured  
out,  
And I saw them go with pain,  
And now what befell them I never can  
tell,  
For they never came back again

THE grave old clock on the mantelpiece  
Is ticking the hours away,  
There's never a smile on his solemn face  
Throughout all the merry day.  
Tick-tock, tick-tock,  
Whatever we do or say



When his hands are showing a quarter  
to nine,  
We must hurry to school away,  
The clock never scolds nor gives us a  
frown,  
If we stop a minute to play.  
Tick-tock, tick-tock,  
Whether we go or stay.



Pretty flowers, tell me why  
All your leaves do open  
wide,  
Every morning when on high  
The noble sun begins to  
ride?

SYBIL SCOTT PALEY

THE NEXT VERSES AND NURSERY RHYMS ARE ON PAGE 5045

# THE LITTLE MAN BY THE SECRET SHORE

Joceline was very fond of adventures. She was always climbing to the tops of cliffs to see what lived there, and when she was three years old she ran away twice right down the road, to find out where it led to.

One day her father and mother told her to stay at the seaside, and when they had been there a little time Joceline noticed that there was one part of the shore they could never reach, because a bit of cliff stuck out such a long way into the sea, and the cliff was so high that one could not possibly get down it.

One morning, when Joceline had awakened very early, she sat up in bed, thinking what a lovely place that secret shore would be for an adventure if only she could find a way through that cliff. After a while she got up and dressed, and then ran out along the road to the shore.

When she had hunted about a good time, she felt so tired that she lay down to rest. And as she lay there, almost asleep, she suddenly saw a tiny black man, dressed like a coal-man, go hurrying through the grass towards a rabbit-hole, into which he disappeared.

Joceline was astonished, she sat up, and was still more excited to notice that the black man had dropped a piece of the biscuit he had been eating. She was so hungry that she picked it up and ate it, and suddenly found herself rapidly growing smaller and smaller, till she was just a little smaller than the black man. She could now enter the rabbit-hole quite easily, so on she ran, for this seemed to her a lovely adventure. The rabbit-hole sloped down to a dark passage, and, as she ran, her heart went bump, bump, bump, for she thought the rabbit-hole must lead to the secret shore.

And so it did. When first Joceline reached the shore, she had to blink her eyes quite hard, for, instead of ordinary stones on the beach, there were diamonds and pearls, and rubies and emeralds, and other sorts of precious stones. How beautiful they were! But the worst of it was, she was so tired and hungry that she couldn't enjoy the sight of the pretty stones at all. She put just a few in her

pockets and determined to go straight home. But when she tried to find the hole she had come out at, she couldn't see it anywhere. So she kept on tumbling over the great stones, and getting more cross, hungry, and tired every minute. At last she saw that she had got quite close to the little black man who was busy filling a sack with precious stones.

Joceline gave a little cough, and then said very politely, "Please, could you tell me the way out?"

The black man gave a regular jump, and turned round in a frightful passion.

"How have you got here?" he shouted. "And after all the trouble I've taken to keep you nasty little faeries out! You bothering, interfering monkey! As if you hadn't got enough pretty things of your own without coming to steal mine!"

"If you please," replied Joceline in a frightened voice, "I don't want your pretty stones. I only want my breakfast. I'm so dreadfully hungry!" And she burst out crying.

The black man looked at her for a minute, and then he made a grimace.

"You are not a fairy," he said. "You are only a silly little human girl. But I didn't know they made them that size."

He seemed so pleased to find she was not really a mischievous fairy—for, of course, faeries can't cry—that he got quite good-tempered.

"Want some breakfast, do you?" he asked. "Oh, well, that's easy enough!" And he took a little black stick out of his pocket and waved it a few times in the air, and—what do you think?—all the stones just round Joceline turned into mince pies, jam tarts, sausage rolls, and milk scones!

So Joceline sat down, and began eating away as hard as she could, and the black man turned his back on her and went on stuffing his sack full of stones. When she had eaten as much as she could, she got up and gave another little cough.

"If you please," she said quietly, "I've had enough to eat, and thank you very, very much. And now, please, could you show me the way home?"

The black man turned quickly round. "You're a very nice-spoken little

## A CLEVER BAD MAN

THE STRANGE TALE OF VIDOCQ, THE BAKER'S SON WHO ASTONISHED THE WORLD AND LEFT A NAME THAT WILL NEVER BE FORGOTTEN

TOWARDS the end of the eighteenth century, a baker, living in the French town of Arras, had a son born to him who was destined to astonish the world, and leave behind him, in the annals of crime, an almost imperishable name.

The baker's name was Vidocq and he appears to have been a hard father, but very industrious and honest. By the time that little Vidocq was eight years of age, the father's strap was in daily use. Whether he might have made something good out of his son

he was sent to prison. This experience did not cure him, however, and directly he was set free he stole the money-box of his own father and ran away.

After terrible sufferings with showmen, menageries, Punch-and-Judy exhibitions, and the like, Vidocq returned home, famished and miserable, to be welcomed with tears by the poor mother who loved and adored him.

We have not room to tell the full story of this extraordinary person, and so we must hurry over many of his adventures and come to the time when



YOUNG VIDOCQ WAS WELCOMED WITH TEARS BY HIS POOR MOTHER, WHO ADORED HIM by kindness and wise advice we cannot tell; all we know is that the little Vidocq was a bad boy, that his father constantly beat him, and that he grew steadily worse.

When he was sent out with a basket of loaves, he often stopped to talk to the thieves and low characters in the town, and was proud to be their friend.

He learned from these scoundrels how to steal money out of shop tills with a feather which had glue at the end. He robbed fowl-houses. He stole everything he could lay hands upon, and sold the articles in pawnshops. In vain his father flogged him.

The boy appeared incurably bad, and

he made his first escape from prison. Locked up on a false charge, Vidocq escaped by means of a woman's disguise, brought into the cell by his sweetheart. Instead of concealing himself or flying from the town, he walked about in broad daylight, and at last went into a tavern. As he sat there a sergeant and four men approached.

"If you are looking for that rascal Vidocq," said the escaped prisoner, "hide in this pantry, and you will see him come in. When he enters the room, I will make a sign to you."

No sooner were the five men safely in the pantry than Vidocq quickly turned the key upon them, and said

"It is Vidocq who has locked you in. Farewell, my friend, farewell."

A few days later, he was caught and placed in a cell with another prisoner. It is possible he began to make a hole in the stone wall and Vidocq assisted. Just before the day of his trial they thought the hole was big enough for them to escape through. Vidocq crept in, but the hole was too narrow; he could neither advance nor draw back. His agony was so great that his cries brought the sentry, and he was dragged out of the hole, bleeding and nearer death than life.

On the day of his trial he was taken with eighteen other prisoners to the court. They passed a corporal and a troop of soldiers, and entered an ante-room. There were two gendarmes in charge of them. One of these gendarmes put down his hat and cloak and entered the court. Hardly had the door closed than Vidocq slipped on hat and cloak, and, taking a prisoner by the arm, led him quietly to the other door, and passed out before the corporal and his troop.

He was taken again after a few months of freedom, but escaped very simply, because the gaoler one night failed to fasten him in properly. The next time he was caught he found himself thrown into a cell occupied by two desperate prisoners. They told him that they were working their way through the stone floor, and that very soon they would be near enough to the river surrounding the prison to permit of their dropping quietly into the water and swimming away.

At last the burrow was complete, and all they had to do was to drop quietly into the river and swim to shore.

But they had miscalculated. Instead of having to drop into the water, as the last stone bulged out from its place the river came rushing in upon them, and poured, with a roar, up their tunnel. They had dug too deeply. When the gaolers arrived they found the three prisoners splashing about in a flood, drenched to the skin.

After more adventures Vidocq was brought to trial on a charge of forgery. He was perfectly innocent, but his record was so bad, and the evidence against him seemed so clear, that he

was pronounced guilty. And then was passed upon him by the judge the terrible sentence of eight years at the galley.

"The chain of galley-slaves," says a writer of Vidocq's life, "linked two by two, set out upon the march for Brest. By day they toiled on foot, dragging a weight of fifteen pounds at either ankle, or rode upon long waggons, while their irons, white with hoar-frost, struck cold into their bones."

The galleys filled Vidocq with horror. To live there would have driven him mad. He soon made plans for escape. From one of the convicts Vidocq obtained a file, a wig, and a sailor's shirt and trousers. He filed at his chains till they were almost separated, put on his sailor's dress under the convict's garb, and, while he was at work at the pumps, slipped behind some timber, snapped his chains threw off his prison dress and, putting on his wig, escaped into the town.

But the greatest danger lay ahead. To get out of the town he had to pass the city gate, which was watched by an ex-galley-slave, a man who could detect a prisoner even by his walk. Vidocq, however, marched straight up to him, asked him for a light, and then passed calmly out into freedom.

Soon after he was in prison again, for in France every tramp must show his passport to the police, and so it is very difficult for a man who is once down in the world ever to rise again.

This time he got himself into the infirmary by chewing tobacco which made him ill, and there, by wheedling one of the attendants, he procured a nun's dress, and so escaped.

He made his way in safety to a town where there was a tavern recommended to him by a convict. He found this house, gave the password, and was shown by the landlady into a room filled with desperate robbers, who started at sight of a nun. He was given clothes on condition that he would help in robbing a house. But Vidocq wanted to live an honest life. He escaped from these villains, and made his way home. Always, it seems, this desperate man had a tender regard for his mother.

It was unsafe for him to remain in his native town, and he set off for Holland. Many adventures befell him, on sea as well as on land, and at last

## STORIES FROM THE TALMUD

AMONG the volumes held sacred in the world to-day and for centuries past, the Jewish Talmud will always take a prominent place. It is regarded by the Jews almost as a second Bible, and a great part of it consists of traditions and laws that are said to have been handed down from the time of Moses by word of mouth. It contains the writings of all the greatest Jewish rabbis or teachers, and consists of history, geography, poetry, law, and theology, unlike anything else in all literature. There is much that is dull and trivial, but there is also much that is wise and true, and many good stories, some of which are given below.

### THE RICH MAN'S DIAMOND

A RICH Jew, who had a very poor neighbour, was told by a fortune-teller that some day all his wealth would



THE WIND CARRIED HIS TURBAN AWAY

belong to the poor man. This preyed upon his mind, so he sold everything, and with the money purchased a large diamond, which he sewed in his turban. "Now," said he, "my poor neighbour can never obtain my diamond."

Some time afterwards, when he was at sea, the wind carried his turban from his head, and it fell into the water and sank.

"At any rate," thought the Jew, "if I have lost the diamond, my poor neighbour can never get it."

But a few days later the poor man bought a fish in the market-place, and upon cutting it open found the diamond, which had been swallowed by the fish.

### THE BEAR IN THE WELL

A FOX and a bear were out walking together one day, when, as they passed a house, they smelt the dinner

cooking. The fox suggested to his companion that they should creep into the kitchen when no one was there and steal some of the food. The bear agreed, but while they were in the kitchen the cook came in, and the bear was caught and punished. For this he threatened to kill the fox; but the cunning fox said:

"Pray do not let us quarrel. I will take you to another place where we shall certainly obtain plenty of food."

At night the fox led the bear to a deep well, and, pointing to the reflection of the moon in the water below, said:

"There is a fine cheese. We will go down and secure it."

He then got into one of the buckets at the end of the rope, and told the bear



"DO NOT LET US QUARREL," SAID THE FOX to get into the other. But as he was too light to balance the bear's weight, a large stone was placed with him in the pail.

As soon as the bear had entered the other bucket the fox threw out the stone, and the bucket with the bear inside descended, and was left in the well.

# THE LITTLE LOMBARD SENTINEL

A VERY popular work with the children of Italy is "Cuore," which means Heart. It is written by E. de Amicus, in the form of a schoolboy's diary. Every month it contains a true story of a hero, and this story from "Cuore" has been translated by a clever little reader of The Children's Encyclopedia, Cesarma Cagnetta, who is only ten years old.

THE event written down in this little story happened in the year 1859, a few days after the battle of Solferino and San Martino, won by the Italians and French over the Austrians, during the war for the liberation of Lombardy from the oppressive yoke of the latter.

One early June morning a little company of the Saluzzo cavalry wound its way slowly by a lonely pathway in the direction of the enemy. It was inspecting the country on all sides. The company was led by an officer and a sergeant, and all gazed silently into the distance, their eyes fixed, ready to see at any moment the white uniforms of the outposts of the enemy between the trees.

In this way they came up to a small cottage surrounded by trees. In front of the door a boy was standing, he might have been twelve years old. He was peeling a thin branch with his pen-knife to make himself a stick. From a window of the cottage a large Italian flag was flying. The cottage itself was deserted. The peasants, having hung out the flag, had run away for fear of the Austrians. The moment he saw the horsemen the boy threw away his stick and lifted his cap. He was a handsome lad, possessing an open face, with big blue eyes and fair hair. He was in his shirt-sleeves, and the unbuttoned collar showed his bare neck.

"What are you up to here?" asked the officer, stopping his horse. "Why didn't you leave with your family?"

"I have no family," answered the boy. "I am a foundling. I work a little for everybody, I am waiting here just to see the war, and watch the Italians defeat their foes."

"Have you seen any Austrians pass?"

"No, not for three days."

The officer sat still, thinking a moment; then he dismounted, and, leaving the soldiers, he went into the house and up on to the roof. The cottage was low, and from the roof he could see only a small stretch of country.

"One would have to climb a tree," thought the officer, and came down.

Just in front of the court a tall tree shot its leafy top into the blue sky. The officer was still lost in thought, looking first at the tree and then at the soldiers. All of a sudden he turned to the boy and said:

"Can you see well, young one?"

"Me? Oh, I could see a sparrow flying a mile away!" answered the boy.

"Could you climb to the top of that tree?"

"To the top of that tree? In half a minute!"

"And could you tell me what you see from there—if there are any Austrian soldiers in that direction, or clouds of dust, or guns that shine, or horses?"

"Of course I could!"

"And what shall I give you for being such a help to us?"

"What shall you give me?" repeated the boy. "That's good! Nothing! If it were for the Austrians—never! But for ours! I am Lombardo!"



"WHAT ARE YOU UP TO HERE?" ASKED THE OFFICER



He got up and stood looking down at him, and the sergeant and the two soldiers stood motionless over him. "Poor boy! Poor boy!" the officer repeated sadly.

Then he went into the house, took away the Italian flag, and spread it over the little dead body leaving only the face uncovered.

The sergeant picked up the boots, the cap, the half-peeled stick, the knife, and put them all together at the boy's side.

They stood silent for a moment, then the officer turned to the sergeant.

"We will send the ambulance for him," he said. "He has died as a soldier, the soldiers shall bury him!"

When he had said this, he kissed his hand to the boy and shouted, "To horse!"

The soldiers jumped on to their saddles, the company formed again, and they resumed their march. By the same road that the cavalry had trod that morning, passed in the evening a large battalion of soldiers who had

fought valiantly a few days before the great battle of San Martino.

The story of the boy's death already spread itself among the soldiers before they left the camp.

The path, which was on the bank of the little stream, ran within a few steps of the cottage. When the first officer

the battalion saw the little body stretched at the foot of the tree and covered by the flag, they saluted with their swords, and one of them, as he passed, snatched a few blossoms and threw them on the little form.

Then all the men, as they marched, plucked flowers too; and scattered them over that silent form. And officers and soldiers alike saluted him as they passed. "Bravo, bravo, little patriot!"

One officer

threw him his medal for valour, another stooped to touch the boy's forehead.

And the flowers still rained on his fair head. And he slept on in the grass, as though he was glad to have given his life for his dear country, Lombardia.

"BRAVE LITTLE FELLOW!" CRIED THE OFFICER



## THE LAWYER AND THE OYSTER

As two men were walking by the seashore, they found an oyster, and began to quarrel about it.

"I saw it first," said one man, "so it belongs to me."

"I picked it up," said the other, "and I have a right to keep it."

As they were quarrelling a lawyer came by, and they asked him to decide in the matter.

The lawyer agreed to do so, but, before he would give his opinion, he required that the two men should give him their assurance that, whatever he might say, they would be quite satisfied with his decision. Then the lawyer said.

"It seems to me that you both have a claim to the oyster, so I will divide it between you, and you will then be perfectly satisfied."

Opening the oyster, he quickly ate it, and very gravely handed to each of the men one of the empty shells.

"But you have eaten the oyster!" cried the men.

"Ah, that was my fee for deciding the case!" said the lawyer. "But I have divided all that remains in a fair and just manner."

That is what generally happens when two quarrelsome persons go to law about anything they cannot agree upon.

We say that one thing reminds us of another. This is to say that, acting through memory, one thing is associated with another, but association is not limited just to the times when we notice and remark how one thing suggests another to our minds. It is really going on all the time, in small things as well as in great, faintly, as when we are just noticing things in a general way, or vividly, as when we are thinking with all our might.

### THE WONDERFUL WAY IN WHICH OUR THOUGHTS ARE LINKED TOGETHER

The first man to write down anything like a clear account of this great law of association was the Englishman, Thomas Hobbes—of whom we read on page 4620—and this subject has always been studied more especially in England than anywhere else since his time. It is very interesting that, in later years, we have been able, by studying the course of the fibres in the brain from one part to another, to get some key to the way in which association works. Certainly these discoveries would have deeply interested Thomas Hobbes.

We realise now that all thinking is *relationing*, as it is called—that is to say, associating. We can understand how it is that the greater part of the human brain consists of association cells and association fibres. They are not directly concerned with any kind of sensation, but are concerned with linking up our sensations, so that, by a gradual and orderly process, it is possible for our minds to pass from an infant's first dim appreciation of the difference between light and darkness to the highest ideas which we can have, such as the conception of the nature of light, and the Power whence it springs.

### HOW ALL OUR THINKING DEPENDS UPON OUR MEMORY

Though association is so wonderful, and lies at the bottom of all thinking, yet the laws of its working are really not very difficult to understand. It depends, of course, upon memory. Let us ask ourselves why it is that one thing calls up another and not something else, and why it calls up one thing to one person and another thing to another person. Why does a cat suggest a mouse to our minds, or why, to a particular person, should a chair suggest the name of some old friend,

perhaps, who has been dead for many years? It is possible to answer these questions fairly well. We associate things when we have seen them at the same time, which would mean an association of place as well as of time, we also associate things because they are like one another, and sometimes, though it sounds curious to say so, one thing suggests another just because that other thing is very different. The last two cases we may call association by likeness and by contrast.

These are all the kinds of association that are usually described; but perhaps there is also a kind of association of cause and effect in the minds of people who are apt to think of causes and effects. Probably this is so, because we are sure now that there is a kind of memory which goes by causes, as when we remember a thing because we know the reason for it. This is much the highest type of memory.

### CLEVER ANIMALS THAT ARE ABLE TO THINK LIKE MEN

Learning of every kind depends upon memory. It is certainly true that all except the very simplest kinds of learning, and perhaps those also, depend upon association. We must not, however, suppose that human beings are the only creatures that have this power. Animals have it in some degree, and the more intelligent the animal is, the clearer is the evidence we get of the association of ideas.

A striking case is that of the old war horse which, when it was young, plunged into battle at the bugle's call. Years afterwards the sound of a bugle may rouse it to the most tremendous excitement and expectation, because there has been established in its mind an association of ideas between a bugle and a battle. This association of ideas may, of course, be noticed in dogs; indeed, there is no doubt that dogs have a certain amount of power of reasoning, and there can be no reasoning without association of ideas.

In human beings the power of association varies enormously, and, on the whole, we may say that, beyond a doubt, the greater, the deeper, the wider, the richer, the more varied the power of association in a person the higher and finer is the mind of that person, but we must particularly add

basis of the differences existing between one man's mind and another—the stupid and the clever man, the poet and the man of science, and so on

# **SOMETHING THAT BOYS AND GIRLS CAN DO QUICKER THAN OLDER PEOPLE**

In the first place, there are differences in mere quickness of association, as we all notice in the talk of different people. The process is often extraordinarily quick in children, as their sharp replies testify. In old age it becomes very much slower. There are also differences in the variety of association, some people's minds always running more or less in one direction, while the mind of a great poet, like Shakespeare, makes associations of every conceivable kind.

Some of the special kinds of association are worth noticing, especially as we cannot too soon realise that these differences are natural. If the world were wise, one of the greatest tasks it would set itself would be, in the interests of everybody, to find out quite early the special natural tendencies of different children, and then to try to make the most of them on the lines which Nature has dictated. So many lives are spoilt, so much time is wasted, so much misery caused by our trying to make a child into this, or that, or the other, when the whole structure of his mind, if we could only see it, declares that he will never do that thing well, but might do something else very well indeed.

It is true that there are a great many people in whom there is no very marked tendency in any one particular direction. But very often we think that such is the case when really we have just failed to keep our eyes open.

# **WHY SOME PEOPLE ARE QUICK AND CLEVER AT DOING SUMS**

In some minds associations are keen and strong in the direction of numbers. No one can say what it is in the brain that decides this, but for practical purposes it really does not matter—the fact remains. Counting, calculating, measuring, reckoning, comparing in terms of length and number and quantity—all these are things which come naturally to a person, and, like other things which come naturally, are done with pleasure. Apart from lessons or work, his interests and pleasures and games, the things he wants to know and

find out will largely take the direction of numbering and measuring and calculating.

Now, there are many good and useful careers for such a person, but, on the other hand, there are people in whom associations of number are few, slow, difficult, and, indeed, positively unnatural, though they may take a deep interest in flowers and plants, the face of the sky, the weather, the wind, and so on.

Are we right in trying to make bank clerks, shall we say, of these people, or ought they to go to Canada to help in the great work of providing food for mankind?

While some people think in numbers, others, rather of the same type, think easily and quickly in terms of space. Some like putting things together and taking them to pieces, they like making little toy machines, they want to know the method by which everything works, and are naturally clever in knowing what will fit into a certain space, and how to make a toy work in one way if it will not work in another.

# **THE KIND OF PEOPLE WHO ARE CLEVER AT UNDERSTANDING MACHINES**

These are the practical people to whom engineering probably offers the best careers, though we must not judge by the tastes which children of five or six or seven years old have, as these tastes often come and go. If associations of number are strong in these people, so much the better for them, for mathematics and geometry go well with the engineering faculty, and help to make the best engineers.

In the highest types of this kind of mind it is possible not merely to understand associations which earlier minds have formed, but to form new ones which no one has ever formed before. So that a person of this type does not merely understand the old machines, but he can invent new ones.

If he be working more at theory than at practice, his powers will show themselves in devising new experiments and new kinds of apparatus for making experiments with, and the practical difficulties, which would utterly dishearten people of another type, give him pleasure to conquer. Other people's minds would simply stop working, but his seems to think more clearly.

These are the people who make either great inventors or great experimenters, adding to our knowledge of heat and

small has lost its importance, and only sounds and sights need be considered. So these people who think and associate mostly by sounds are called *auditives*.

# HOW WE HEAR IN OUR MINDS THE SOUND OF A WORD THAT WE SEE

Man has learnt to do many wonderful things, and especially he has learnt to write down marks which stand for sounds, and this invention of written language, and the making and reading of books, really belongs to the working of this kind of mind, though actual hearing and sound may not come in. Nevertheless we imagine the sounds of the words as we read them, and so, though we are using our eyes to read, and do not seem to be using our ears at all, yet the processes that go on in the brain and in the mind are practically the same as those which go on when we listen to a person speaking. So we can understand what kinds of minds the *auditives* have.

Some of them, the musicians, are deeply interested in sounds just as sound is, they remember tunes, and can reproduce them, they can even make new tunes. They can imagine in their minds how one kind of instrument sounds with another, or how certain notes will sound when they are played together, or one after the other. So, just as the artists make pictures, these people make music. It is as easy and natural for a musician to make a tune, and perhaps as impossible to put a machine together—much less to invent a new one—as it is easy for the engineer to invent a machine and impossible for him to invent a tune.

Of course, we are not saying that many people do not combine more than one of these powers of association. There are such people, and they must be considered to be very fortunate. **THE HIGHEST KIND OF MIND THAT A MAN CAN HAVE**

We now come to what is, on the whole, the greatest of all the types of mind, and this belongs to the people whose interests are naturally with words. For the human mind is at its best when a person is dealing with words. When a person is dealing with words, he is not so much interested in the movement of his lips and in the sound of his voice as the artist is, nor yet in the things of his senses as the musician is. But as a musician can invent

tones and tunes, and the artist remembers colours and forms, so these people remember words and phrases, and the ideas which words and phrases express.

The one type of men can associate lines together to make a picture, another puts notes together to make a tune, and the third puts words together to make a thought. Now, pictures may be just the same as thousands of pictures before them, tunes may be just the same as many tunes before them, and so, of course, may sentences, phrases, ideas, and thoughts.

But the small number of great people whom we call original, and who make the progress of the world, can not only remember and reproduce the old associations, but they can make new and original ones, and so just as we have great pictures, great statuary, great buildings from one type of mind, or great music from another, so from this last type of mind great thoughts will come.

## THE WONDERFUL MIND OF THE POET, WHO DRAWS LIFE FROM THE SOUL

Every now and again there comes into the world a person whose mind combines both varieties of the auditive type. He not only has ideas made by associating words, but he is also concerned with the musical quality of words, and takes pains to put them together so that they have a pleasant rhythm.

This man is a poet. The greatest poets are visualisers as well; they can see great pictures in their minds, as Milton saw pictures when he wrote "Paradise Lost", or they can recall the appearances of Nature, as when Wordsworth wrote his poem about the daffodils. Their minds are so rich, and have so many powers of association, that they can compare things together which other people would not think of comparing.

All these qualities added together, perfectly blended and governed by something which is deeper than all associations, and which we can only call the soul, went to make the few sublime poets of the world, who thought and saw and heard and felt and sang, remembered and prophesied, and did all these things so well and blended them so wonderfully, that their poetry must be called the greatest and most glorious of all the varied products of the human mind.

The next part of this book is about



of which about six are occupied by the 20 courts, 200 staircases, and about 1,000 chapels, rooms, and galleries that go to make up this vast building

The popes who built the Vatican will always be remembered as among the men who helped to make Rome beautiful and we may here note the names of some of them. First there was the powerful Innocent III., who began the rebuilding, followed by Nicholas III., who began the scheme of enlargement. John XXIII added to the security of the palace by connecting it by a passage with the fortress of St Angelo.

Nicholas V, the pope with the master-builder's mind, planned the scheme for making the Vatican what it has since become—the home of the pope and the cardinals, the offices of the Church, the meeting-place of all her pilgrims, the starting-place of all her missionaries. The work which began under this pope was carried on by Alexander VI. Paul II made further extensions, and then Sixtus IV built the world-famous Sistine Chapel, so called after his name.

#### THE CHURCH OF ST. PETER THAT COST MORE THAN TEN MILLION POUNDS

It is necessary now to turn to the building of the huge church of St Peter, Rome's greatest sanctuary, the church dearest to Roman Catholics, as the Vatican is the palace most revered by them. The building of the church was begun in 1506 by Julius II, and extended over 176 years. The cost of the main building alone was ten million pounds. So hard was the struggle to get money that two of the popes were driven to methods which roused the indignation of Martin Luther and others, and led to the Reformation.

St Peter's at Rome, built to be the greatest church of the Christian world, led to the first great division in Christendom and brought into being the Protestant Church. Now that it is finished, St Peter's is a building unmatched in splendour for its marbles and statuary and paintings, and for the richness of its decoration in jewels and precious metals. We see something of the magnificence of this wonderful sanctuary from the pictures on page 309.

But Rome, as a city, suffered by the building of this mighty cathedral. Nearly all the marble with which the interior is decked was taken, not from

modern quarries, but from ancient buildings, many of which were levelled to the ground for the sake of only one or two pieces. However, be its history what it may, Rome has the richest and most remarkable church in history, the church which cost most and took longest to build. It also costs more to maintain than any other church.

#### THE GREAT TREASURES DESTROYED TO MAKE ROOM FOR ST. PETER'S

The present cathedral occupies the place of an earlier one. The older church was rich beyond comparison in works of art, which had taken long to gather together, but when the first building perished these were destroyed, either deliberately or through carelessness. This is a crime for which lovers of the beautiful cannot forgive Pope Julius II, who directed the destruction of the old church to make way for the new.

The Vatican and the great cathedral and the hundreds of churches and the richly stored museums and galleries are the works which have been carried out under the popes and the men who have lived in the times during which the popes have been masters of the Eternal City. Now we may turn to the story of some of the artists who have worked for the glorification of the city. Needless to say, the great men of whom we read in our stories of the Makers of Florence and Venice, beginning on pages 279 and 449, found their influence extended to Rome.

Fra Angelico—about whom we read on page 398—made the world grateful to him, not alone for the sermons which he preached with his brush, he inspired men with his own ardour and made them great painters too.

#### FABRIANO, THE HAPPY ARTIST WHOSE PICTURES ARE FULL OF JOY

One of these was the warm-hearted Gentile da Fabriano—of whom we read on page 446—who was born about the year 1348, at Fabriano, the town from which he took his name. He was nearly forty years older than the painter-friar. Nevertheless, it was from this holy man that Fabriano learned, though he may first have studied under Allegretto de Nuzio.

Some of his finest work was done for Florence and for Venice, the latter city giving him a pension and a title of nobility. Fabriano was well advanced in years when his fame reached Rome,

and caused Pope Martin V to summon him thither to help in adorning the fine church of St John Lateran. His pictures express the joyfulness of spirit by which he was always animated. He had something of the happy childish spirit which lives in the delightful pictures of the saintly Fra Angelico.

Among the famous artists of Florence of the early fifteenth century was Fra Filippo Lippi, who, born about 1406, lived all his life in Florence. His son, Filippino Lippi, who was born about 1458 and died in 1504, was only a child when his father died, but the genius of the sire descended upon the son, and the fame of the Lippi family was carried by Filippino to Rome, where to this day some of the glories of his art are to be found in the frescoes which he painted in the Minerva church to illustrate scenes in the life of St Thomas Aquinas.

#### THE MASTERPIECE OF BOTTICELLI THAT WAS HIDDEN AWAY

But a greater artist than Filippino studied in the school of Fra Lippi. This was Sandro Botticelli, born at Florence in 1446. He was to have been a goldsmith, and was apprenticed to one named Botticelli, and took that name, for his own surname was Filipepi. Happily, he was passed on to Lippi, and then he caught the spirit of his master, and improved upon it. In his youth he loved the myths and legends of classical stories, and painted his ideas of them upon immortal canvases. Such was his "Birth of Venus" and "Venus with the Graces." But religious art presently called him, and two of his devotional pictures are among the greatest artistic glories of Florence to-day.

The manner in which he painted did not always please the critics, for one of his pictures was declared to be heretical, and had to be hidden away. Nevertheless, he was called to Rome, and gave the best of his life to painting three glorious frescoes in the Sistine Chapel at the Vatican. He found time to illustrate the great work of Dante with engravings of exceeding beauty. Large as were the sums he earned, his declining years were passed in poverty, relieved only by a pension from the Medici family. To make matters worse, he was stricken with lameness and blindness, and he was quite unable to follow the art that he loved so much.

We now approach the company of giants, a period of marvellous artists—sculptors, and painters. First let us take Donato Bramante, who was born near Urbino in 1444, and died at Rome in 1514. He was at school in Milan, where he studied geometry and perspective sciences which in those days were not at all well understood by even the great artists. Bramante, therefore, is of much importance to us in history for the pains that he took to spread the study of these sciences, for by so doing, as we can all easily understand, he introduced greater exactness and truth into his work.

#### BRAMANTE, WHO LAID THE FOUNDATIONS OF ST. PETER'S

Bramante was one of the best painters of his day, but he laid aside his brush for the pencil and compasses of the architect. Invited to Rome by Pope Alexander VI, and working on under Julius II, he first built great galleries for the Vatican, and then designed and laid the foundations of St Peter's. He meant to make the cathedral in the form of a Greek cross with a noble dome to it, but the work had been only eight years in progress when he died.

At this time three of the greatest geniuses of the world were reaching the height of their glory. One was Leonardo da Vinci, who had but little to do with Rome, but he was one of the three greatest figures there for a short time of his life. The story of his work is told on page 777, and we also read about him on page 4586, so that now we need only remember that he was one of the most fertile geniuses that ever lived.

#### MICHAEL ANGELO, THE GREATEST ARTIST IN AN AGE OF GREAT ARTISTS

A younger man than Leonardo was Michael Angelo—of whom we read on page 4161—younger by twenty-three years, but who was eight years older than Raphael. With these three men for rivals, we may rightly say that this was an age of giants. Michael Angelo and Leonardo were rivals for a work at Florence, resulting in each producing a world's masterpiece, and they were rivals again at Rome.

It is strange that the same age should produce two such men as Leonardo and Michael Angelo, for in many respects they were alike. They towered above nearly all their fellows in several of the arts. Michael Angelo was one of

and caused Pope Martin V to summon him thither to help in adorning the fine church of St John Lateran. His pictures express the joyfulness of spirit by which he was always animated. He had something of the happy childish spirit which lives in the delightful pictures of the saintly Fra Angelico.

Among the famous artists of Florence of the early fifteenth century was Fra Filippo Lippi, who, born about 1406, lived all his life in Florence. His son, Filippino Lippi, who was born about 1458 and died in 1504, was only a child when his father died but the genius of the sire descended upon the son, and the fame of the Lippi family was carried by Filippino to Rome where to this day some of the glories of his art are to be found in the frescoes which he painted in the Minerva church to illustrate scenes in the life of St Thomas Aquinas.

#### THE MASTERPIECE OF BOTTICELLI THAT WAS HIDDEN AWAY

But a greater artist than Filippino studied in the school of Fra Lippi. This was Sandro Botticelli, born at Florence in 1446. He was to have been a goldsmith, and was apprenticed to one named Botticelli, and took that name, for his own surname was Filipepi. Happily, he was passed on to Lippi, and then he caught the spirit of his master, and improved upon it. In his youth he loved the myths and legends of classical stories, and painted his ideas of them upon immortal canvases. Such was his "Birth of Venus" and "Venus with the Graces." But religious art presently caught him, and two of his devotional pictures are among the greatest artistic glories of Florence to-day.

The manner in which he painted did not always please the critics, for one of his pictures was declared to be heretical, and had to be hidden away. Nevertheless, he was called to Rome, and gave the best of his life to painting three glorious frescoes in the Sistine Chapel at the Vatican. He found time to illustrate the great work of Dante with engravings of exceeding beauty. Large as were the sums he earned, his declining years were passed in poverty, relieved only by a pension from the Medici family. To make matters worse, he was stricken with lameness and blindness and he was quite unable to follow the art that he loved so much.

We now approach the company of giants, a period of marvellous artists sculptors, and painters. First let us take Donato Bramante, who was born near Urbino in 1444, and died at Rome in 1514. He was at school in Milan, where he studied geometry and perspective, sciences which in those days were not at all well understood by even the great artists. Bramante, therefore, is of much importance to us in history for the pains that he took to spread the study of these sciences, for by so doing, as we can all easily understand, he introduced greater exactness and truth into his work.

#### BRAMANTE, WHO LAID THE FOUNDATIONS OF ST. PETER'S

Bramante was one of the best painters of his day, but he laid aside his brush for the pencil and compasses of the architect. Invited to Rome by Pope Alexander VI., and working on under Julius II, he first built great galleries for the Vatican, and then designed and laid the foundations of St Peter's. He meant to make the cathedral in the form of a Greek cross with a noble dome to it, but the work had been only eight years in progress when he died.

At this time three of the greatest geniuses of the world were reaching the height of their glory. One was Leonardo da Vinci, who had but little to do with Rome, but he was one of the three greatest figures there for a short time of his life. The story of his work is told on page 777, and we also read about him on page 4586, so that now we need only remember that he was one of the most fertile geniuses that ever lived.

#### MICHAEL ANGELO, THE GREATEST ARTIST IN AN AGE OF GREAT ARTISTS

A younger man than Leonardo was Michael Angelo—of whom we read on page 4161—younger by twenty-three years, but who was eight years older than Raphael. With these three men for rivals, we may rightly say that this was an age of giants. Michael Angelo and Leonardo were rivals for a work at Florence, resulting in each producing a world's masterpiece; and they were rivals again at Rome.

It is strange that the same age should produce two such men as Leonardo and Michael Angelo, for in many respects they were alike. They towered above nearly all their fellows in several of the arts. Michael Angelo was one of



the finest sculptors that ever lived, he was one of the greatest painters; yet he was also so eminent a poet that his verses placed him in the very forefront of poets of a particular type.

**WHEN OLD MICHAEL ANGELLO LOOKED BACK UPON HIS WORK AS A BOY**

Angelo was born at Caprese, Italy, March 6, 1475, and died at Rome February 18, 1564. His father, a man of good family, thought it degrading for his son to follow the profession of a painter, but the boy's whole affections were given to art, so he was apprenticed to a painter, when he so soon became expert that at fourteen he was able to correct the work of his master. Long, long afterwards, when Angelo was an old man they showed him some of the paintings which he had done when a little boy. "Ah," he said, "I was a better artist then than I am now."

His life, though so distinguished, was full of vexations. While he was yet young a jealous fellow-apprentice, in a quarrel, picked up a mallet and struck Angelo with such force as to crush his nose, and disfigure him for life. By the time that he was thirty-five the fame of Angelo had spread throughout Italy, and he was called to Rome to undertake the gigantic tomb, or mausoleum, in which the then reigning pope, Julius II, intended to be buried. This vast work engaged Angelo on and off for practically the remainder of his life.

He had been only two years on this work when the pope bade him undertake the decoration of the ceiling of the Sistine Chapel. Here was a task for one man! The ceiling is vaulted, 150 feet long and 50 feet broad. Unaided, Angelo carried out the work in little more than four years. No single work in modern art can compare with this.

**A CEILING WHICH IS ONE OF THE WONDERS OF THE WORLD**

Some of the figures on the ceiling are grand and terrible, others are exquisitely soft and beautiful, and the whole is full of deep feeling, like some great poem in figure and action. This tremendous work has been the wonder of the artistic world ever since it was finished.

While he was at work on it, Angelo gave every thought to it. He would have no help, he would have no on-lookers. The chapel was closed, and he hated to see even the pope himself

there. One day the pope did creep in on tiptoe to see how the work was progressing. The painter saw him, and angrily let fall some tools with a crash near where the pope was standing. The pope fled, but was so angry that Angelo had to leave Rome until the storm blew over.

It must have been about this time that Angelo carved one of his famous statues for Florence. For years and years there had stood in a backyard in Florence a great misshapen block of marble which another sculptor, long before, had spoilt in trying to shape from it the figure of a giant. Angelo was asked if he could carve a figure from it. He said that he could, and the magic of his chisel won from the huge block the great statue of David, with which the world is now familiar. Another famous work is his fine statue of Moses, which we see on page 4947.

**HOW RAPHAEL WAS INSPIRED BY THE WORK OF MICHAEL ANGELLO**

Still, he was not at liberty to go on with his work at Rome, for a war occurred in which Florence was besieged, and Angelo was set to work to fortify the city against the enemy. When he at last settled down in Rome again, he resumed the work on the tomb of Pope Julius. He was eventually made architect for St. Peter's Cathedral, and designed the great dome.

He never married, but he loved a beautiful marchioness, and it was his love for her which inspired some of the most beautiful of his poems. He died when nearly eighty-nine years of age. To the last, though he was proud and reserved in his dealings with other men, he was always a humble student of his art. "I am still learning," this great man used to say right up to the time of his death.

One of the effects of Angelo's work was to inspire Raphael. The latter, born at Urbino in 1483, was only twenty-five when, famous for his work at Perugia and Florence, he was invited by Julius II to Rome. He had already come under the influence of Michael Angelo and Leonardo, but apparently it was not until Angelo's frescoes in the Sistine Chapel were unveiled that he felt the full effects of the master's genius. It carried a message and an inspiration to him that bore wonderful fruit. Not

that he copied Angelo. He was too great to be a copyist. He was the greatest painter that ever lived, and did not need to copy.

But we may be inspired by others less expert than ourselves, and though Raphael was a greater painter than Angelo it was owing to the influence of the latter that there burst forth that light which was to illumine the remaining days of the young man.

The pope made him master architect of St Peter's, the post to which, at Raphael's death, Angelo succeeded. He was also the foremost painter in rank as well as in achievement. He painted the famous frescoes at the Vatican, glorious pictures from Scripture, pictures for the tapestries in the cathedral at Arras, now world-famous, portraits, studies, sketches, and so on. No man ever produced more. He seemed to feel that he was not to live long, and that he must devote every hour to his work. It was well for mankind that he did, for he died when only thirty-seven years of age.

#### A GOOD MAN WHO WORKED HARD AND A BAD MAN WHO MADE BEAUTIFUL THINGS

In his all too short life he gave to Rome, and through Rome to the world, the most marvellous collections of paintings ever done by human hand. He was mourned not only as a great artist, but as a greatly beloved man. Everybody admired him, and so gentle and sweet was his nature that it was said that the very animals loved him. Raphael's work is described on page 778.

Quite a different type of man from the men already mentioned was Benvenuto Cellini—of whom we read on pages 1223 and 4161—the goldsmith and sculptor, who won such fame from his work in Rome during the time of Clement VII and Paul III. He was born in Florence in 1500, and died there in 1571, after wandering all over Rome and France.

His work was very beautiful, and on this account he was forgiven many crimes for which others would have been executed. He lived in rough, lawless days, but Cellini was worse than the average lawless man of his day, and thought nothing of slaying anyone with whom he quarrelled. He wrote the story of his life, and it is considered to be one of the most

remarkable works of its kind in the whole of the world's literature.

While Cellini was swinging his sword and plying his tools, his very opposite, in character, Sebastian del Piombo, was quietly at work with his paintings and portraits. He was a native of Venice, it is supposed, and was born in 1485. A friend of Michael Angelo, it is believed that he had that great man's help in painting his "Resurrection of Lazarus," which now hangs in our National Gallery in London. He was a good, pious man, as well as a distinguished artist, and towards the close of his life became a priest.

#### CLAUDE LORRAINE, THE GREAT PAINTER WHO COULD NOT BE A BAKER

Now we go forward to the seventeenth century, and in its first year we come upon a baby named Claude Gellée, who, being born at Chamagne, in Lorraine, is known to the world as Claude Lorraine. His father was a humble pastrycook, and as Claude grew up he wished to make him a pastrycook too. But the boy could not be made to learn. "He will never know how to heat an oven or bake pastry," his father grumbled.

Claude's brother was a stonemason, and thought the little chap would never be clever enough to follow that trade. "He's so silly that you had better make a priest of him, father," he said.

But study of the ordinary sort was beyond Claude. He would go into the fields and gaze with wonder and delight on all he saw from dawn to dusk, but he could not mind a baker's oven nor use a mason's chisel. He suffered terribly at home, so one day, meeting a party of Flemish artists who were going to Rome to study, he decided to join them, and was allowed to act as their servant.

#### HOW CLAUDE LORRAINE WAITED FOR HIS OPPORTUNITY

Arrived in Rome, he took service with an artist, grinding his colours and making himself generally useful. He was not lazy, as his father had thought, here in the atmosphere of a studio, with all he loved, no day was too long for him, for he was now able to study art. After some years of this life he wandered forth on his travels, studying wherever he went. Returning again to Rome when twenty-seven, he started his career as a landscape artist.

Progress was slow but sure, and at the end of ten years he was commissioned to paint a picture for Cardinal Bentivoglio, who introduced him to Pope Urban VIII, and this made his fortune. All good patrons of art were now anxious to have his works, but he would not readily part with them.

For one picture the pope offered him as much gold as would cover the canvas on which the picture was painted, but Lorraine would not sell it. Illness marred his later years, but to the end Lorraine was diligent and faithful to his art, and a warning to all fathers who think their sons too idle and stupid even to be pastrycooks or stonemasons. He died in 1682.

#### SALVATOR ROSA, THE MERRY MAN WHO PAINTED SAD PICTURES

Another famous landscape painter of this time was Salvator Rosa, who was born at Arienella, near Naples, in 1615, and died in Rome in 1673. He received very little instruction, but wandered about studying Nature in her wildest moods and aspects, and painted pictures strong and gloomy and original. That the pictures should be gloomy is strange, seeing that his nature was so mirthful. He was a brilliantly talented man, whose verses made fun of the great people of the time without fear or favour.

A painting called "Tityus Tortured by the Vulture" made Rosa famous at twenty-three, and he became the centre of a group of distinguished friends. But his verses got him into trouble, and he had to flee to Florence on pain of death.

#### THE BOY CANOVA, WHO MODELLED A LION IN BUTTER

We must close our brief sketch of the artists who have helped to maintain the artistic fame of Rome with the story of Antonio Canova, the father of a new school of sculpture. He was born at Possagno, in Venetian territory, on November 1, 1757, and died in Venice on October 13, 1822. His father died when Antonio was only three years old, and the child was left to the care of his grandparents. A grand old man was his grandfather, who delighted to teach the child to model, and to indulge his fancy in the little workshop where the old man toiled as a stonemason. At nine years of age, Canova, in order to better his education, was placed in

the household of a nobleman, where he soon distinguished himself. There was to be a banquet at the house, but one of the chief ornaments of the table, a great fancy dish, failed to arrive. The host was in despair, but little Canova beautifully modelled a lion in butter, with which everyone was delighted. His master was so pleased that he sent the boy to receive lessons in sculpture. Soon, however, the lad was left to look after himself.

In the morning he studied in the academy or galleries. In the afternoon he worked for a sculptor. In the evening he read. Then he set up a little workshop in a cell under a monastery, and for four years he toiled and studied. At last he produced his first statue, and it set all the great art critics wondering. The Venetian senate sent him to Rome to study when he was twenty-three years of age.

Canova had carefully studied all the ancient classical statuary that he had seen, and he tried, while true to the best old traditions, to give his own work something of the charm of his own mind. It was a new and daring style, and in Rome everybody scorned it.

#### WHAT CANOVA SAID ONE DAY AT THE BRITISH MUSEUM

But Canova was quite undaunted. For twenty years he worked away in extreme poverty at his ideal, and he conquered, in spite of all jealousy, contempt, and rivalry. His work became one of the glories of Italy.

It was to him that Englishmen turned when the critics condemned our glorious Elgin Marbles at the British Museum. Canova came to London to see them, and declared them to be among the finest examples of Grecian art in the world. And as he looked upon these masterpieces of ancient days, the great sculptor said, in his modesty, that, after seeing these, he felt that his own work had been a failure.

Happily, the world does not agree. The world accords to Canova a high place in the assemblage of great geniuses who have helped to keep Rome in her place as the queen of all the cities—a glorious queen for what she was in the days long past, and supreme in beauty and wonder from what more modern effort has made her.

The next Men and Women begin on 5083

caught light, just in time, for as it began to blaze up, the rumble of the distant train became very evident. How eagerly mother and daughter watched that burning pile, hoping and praying that the engine-driver would see it in time to stop the train. The mother took off the red skirt she wore, tied it to a stick, and hurried up the line, waving it about in the light from the fire, while the daughter floundered a burning post, as shown in the picture on page 4957. Nearer and nearer came the roar of the train, it was rounding the curve;

they could see the red light in front of the engine. They redoubled their efforts, and shouted "Stop! Stop!"

Gradually the train slowed down, and came to a stop close to the blazing pile. The driver's keen eyes, accustomed to see far ahead, discovered the dangerous chasm and the empty space where there should have been a bridge, and as his eyes travelled to the burning furniture and the figures of the old woman and her daughter, he recognised the act of courageous sacrifice that had come from a brave heart

## THE MAN WHO THOUGHT OF HIS COMRADES

**D**URING the construction of the railway between Manchester and Leeds, many years ago, a number of tunnels had to be bored. Shafts, some of them two hundred feet deep, were sunk from the hill-tops to the tunnels, for purposes of ventilation.

Among the men employed on this work was a navvy, whose duty was at the top of the shafts. He had to raise the tubs filled underground, and return them empty to the other workmen. If any mishap occurred, such as the breaking of a chain or the falling of a piece of loose rock, he had to warn the men below, so that they could retreat out of danger.

One morning, while he was thus engaged at one of the deepest shafts on the line, his foot slipped, and he felt himself falling towards the narrow

channel, against whose ragged sides or on whose rocky bottom he knew he must be hurled and killed.

In that terrible moment, however, he did not lose his presence of mind. His first thought was of his comrades. If he cried out for help, the men below would rush out of their shelters to see what was the matter, and even if they succeeded in saving him it would be at the tremendous risk of losing their own lives.

So the man, with a chivalry as great as that of any knight, gave in his usual voice the signal, "Look out below!" And, secure in their retreats, ignorant of what was happening, the workmen below heard the crash as their comrade fell; and in his death, by suppressing the instinct to cry for help, he became the saviour of his fellow-workmen.

## HOW JOHN BROWN DIED FOR THE SLAVES

**I**N the great work of stamping out slavery in America, many men did noble deeds and made great sacrifices for the sake of the despised negroes. Particularly was this the case in the long campaign that took place, before the Civil War broke out, to move public opinion, and among those whose whole life was dedicated to the cause of abolishing slavery there was no more earnest and heroic soul than John Brown.

He had, in his boyhood, seen something of the terrible cruelties of slavery, and this had implanted within him a great hatred of the whole evil traffic in flesh and blood, which became stronger and stronger as the time went on. He had a very large family of sons, and these were all trained up in the

strong determination to bring about the abolition of slavery, not only in one or two states, but throughout the United States of America.

Their watchword was "eternal war against slavery," and they stinted themselves in every way to help on the cause, to educate the negroes, and to establish a league which had for its object the helping of fugitive slaves. It has been said that history provides no other instance so remarkable of a whole family being absolutely unanimous to the point of depriving themselves of every luxury for the sake of helping a class of social outcasts like the poor negro slaves of America were. When the party that stood for slavery attacked John Brown and his



**THE WATER CROWFOOT**

The water crowfoot is one of the buttercups. The flower is white and often in spring a sluggish stream will be one mass of white owing to the crowfoots growing in the shallow waters. Farmers collect the crowfoot for fodder.



**THE YELLOW WATER LILY**

This flower has an unpleasant odour like spirit, and in many parts it is called the brandy-bottle. The submerged leaves are thin, but the floating ones are thick and leathery. The Turks make a drink from the flowers.



**THE WHITE WATER LILY**

While the flower of the yellow water lily grows an inch or two above the water, the white water lily is found resting on the surface, where it looks very beautiful. Many think that this is our handsomest wild flower.



**THE ARROWHEAD**

No one can mistake the leaf of the arrowhead, for it is in shape exactly like an arrow-head. The plant grows in shallow streams near the banks, and the white flowers, marked with purple, are found in groups of three.

leaves lay flat on the surface of the water, and are either round or kidney-shaped, green above and purplish beneath. The flowers are almost as large as the leaves, with three sepals and three thin white petals. Before winter comes the water crowfoot has thrown off its floating leaves and withdrawn its living portions largely into the mud, to be safe there until spring, when it will again grow.

The frogbit has no stems down which it can pass to a place of safety, and probably, if it remained on the surface, it might be destroyed when the upper waters were turned into thick ice. So, in the autumn, it sends out short shoots, and at the end of each develops a bud, which falls off and sinks into the muddy bottom, where it lies quietly all through the winter. In spring it wakes up, swells with growth, and rises to the surface, where it soon puts forth a great number of little floating leaves and roots, and flowers in July.

#### The Water Soldier

A near relation of the frogbit is known as the water soldier, because all its leaves are sword-shaped, like those of the flag, but their edges are strongly toothed like the edge of a saw. It is a plant that is almost confined to the eastern half of England; but in the fens it is plentiful enough. During the greater part of the year it remains at the bottom. It has flowers like the frogbit, but larger, and when these are formed the plant rises to the surface.

#### The Water Thyme

Yet another relation of the frogbit is the water thyme, which may be found in all sorts of fresh waters. It has long, brittle stems that are almost transparent, closely set with short, oblong leaves in whorls of threes. The purplish-green flowers are very small, and consist of three sepals and three petals.

#### The Water Lilies

The most showy of our floating water flowers are those of the two water lilies—yellow and white. In many places both may be found in the same water. They are not usually found where the water is more than fifteen feet deep, and they prefer places where there is no strong current. They are both rooted

in the mud of the bottom, and have thick, fleshy root-stocks. The large, leathery, heart-shaped leaves that lay flat on the surface, without getting wet on top, are much alike in the two species. But the flowers, even apart from their colour, are very different.

The yellow water lily never opens widely, but always remains ball-shaped; it is entirely yellow—sepals, petals, stamens, and pistil. There are five or six large sepals, enclosing about twenty small and narrow petals, which bear nectar-glands.

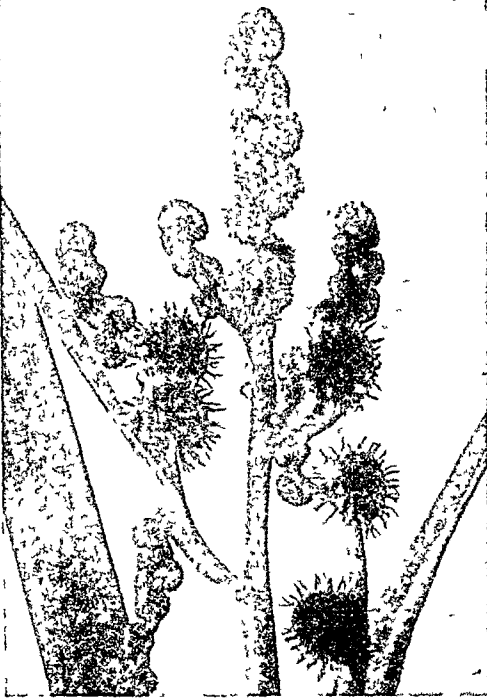
The white water lily is less frequent than the yellow, and is generally found on larger sheets of water. It has only four sepals, and these are coloured green on the outside and white on the inside. They spread widely when the flower is open, and the numerous petals in several rows so dispose themselves that the flower has a very full and attractive appearance. The petals that are next to the sepals are large, and each row gets smaller towards the centre, so that the only thing that marks them as distinct from the broad stamens is the presence of the anthers.

#### The Arrowhead

Among the plants whose roots are in the bed of the stream with leaves and flowers in the air is the arrowhead, whose leaves alone will enable us to recognise it, though we may never have seen it before. They are of regular arrow-head shape, and while some lie on the surface, others stand up. Those that are submerged are thin and almost transparent.

A tall, leafless flowering stem arises from the centre of the arrowhead leaves, and at regular intervals this sends off short branches in threes, each branch ending in a flower nearly an inch across. This consists of three green sepals and three white petals with a purplish base. The lower flowers have no stamens, and are smaller than those above, which have many purple stamens but no pistils.

The pistillate flowers develop into large round fruits. From the swollen base of the plant runners are sent in all directions, and at the ends of these, before winter, tubers will be formed, into which all the materials of leaf and stem will be withdrawn, and next year each tuber forms a separate plant.



THE BUR-REED

The branched bur-reed is a large graceful plant, common in our ditches and ponds. The leaves are sword-shaped, and the flowers are of two kinds, some being small and olive-coloured while the others are larger and green.



THE SNAKE'S-HEAD

This plant, which is also called the fritillary, gets the name snake's-head from the fancied resemblance of the unexpanded flower to a serpent's head. The purple flowers are not unlike tulips, but they droop from the stalks.



THE PURPLE LOOSESTRIFE

The purple loosestrife is a handsome plant, and its reddish-purple flowers, growing in tall spikes among the rushes of a ditch or stream, might be mistaken for foxgloves at a distance. The plant is often used as a tonic.



THE MEADOW-SWEET

This very familiar flower, with its creamy-white fragrant blossoms and handsome foliage, well merits its other name of queen of the meadows. It is mentioned in old flower books as a very useful and reliable medicine.

**The Water Plantain**

Similar in the shape of its flowers, though much smaller, is the water plantain. It is no relation of the plantain of the fields, but belongs to the arrowhead family. The flower-stem rises three or four feet above the water, is much branched, and bears a large number of flowers, similar to those of the arrowhead, but smaller, and of a pale rosy tint. Each flower is complete, with six stamens and twenty pistils.

**The Flowering Rush**

Another member of the arrowhead family is called the flowering rush, though it is only rush-like so far as its leaves are concerned. These are three or four feet long, straight and slender, but they grow quite erectly. The flower-scape is as long or longer, and the flowers are clustered in an umbel at the top. Petals and sepals are alike of a fine deep rose colour, so that the flower appears to be six-petalled. There are six stamens and six pistils, all of a deep red hue. This is one of the handsomest of the streamside plants.

**The Great Water Dock**

Where we find the flowering rush we may also come across a giant dock, with broad, erect leaves two or three feet long, and a great towering panicle of the quaint, reddish-green flowers. This is the great water dock, the largest so far as British docks are concerned.

**The Reed-Mace, or Cat's-Tail**

The leaves of the flowering rush may easily be mistaken for those of the reed-mace, or cat's-tail, which many people wrongly call bulrush—another plant altogether. If we trace the leaves of the reed-mace downwards, we find their lower parts wrapped round the flowering stem, which is not the case with the flowering rush, otherwise they are much alike in shape and size. The stem—an inch thick—rises to a height of six or seven feet, and the upper foot of it is the flower-spike, the greater portion densely crowded with hundreds of tiny dark brown flowers, whose sepals and petals are reduced to mere hairs. The mass of flowers has the appearance of a coat of velvet round the spike.

**The Fritillary, or Snake's-Head**

In certain localities in May we may find the beautiful fritillary, or snake's-head. It is one of the lily family, and

springs from a small bulb, whence come long, slender leaves very much like those of the bluebell, but narrower. A few shorter leaves are attached to the stem, which ends in a single flower shaped like a small tulip, but always more or less drooping. It is pale purple in colour, with oval patches of a lighter tint.

There is no distinction in shape, size, or colour between the sepals and petals, so they are alluded to as a six-parted perianth. There are six yellow stamens, and the pistil ends in three stigmas.

**The Loosestripe**

Returning to our stream, we shall surely find the purple loosestripe among the plants that fringe the bank. It grows to a height of three or four feet, with an angled stem, clothed in lance-shaped leaves, which are usually in pairs, and more or less erect. The upper part of the stem bears whorls of six-petalled flowers red-purple in colour. There are twelve stamens and a slender pistil, and in this plant we shall find differences in the length of the stamens, similar to those found in the primrose.

**The Meadow-Sweet**

The most plentiful of the streamside summer flowers is the meadow-sweet, a plant that, judging by the light, foam-like masses of small white flowers, we should not at first sight take to be one of the rose family. But so it is, and if we look at the beautiful divided leaves, we shall remember that they are much like those of the agrimony and silverweed. The flowers, also, when regarded separately, will be seen to be not unlike those of blackthorn.

**The Water Avens**

Another member of the rose family, though not so plentiful as meadow-sweet, is the water avens, which is closely related to the common avens, or herb-bennet, of fields and waysides. Its leaves are much like those of herb-bennet, which are really on a similar plan of structure to those of meadow-sweet, but with coarser lobes, but the flowers are larger—an inch and a half across—with purple sepals and yellow petals.

**The Dropworts**

There are several of the umbel-bearers, such as the sulphur-wort dropwort, that has round, pipe-like stems of a grey-green colour, and the leaf





THE WATER FIGWORT

Anglers know the water figwort only too well, for their lines often get entangled in the withered seed-vessels of the plant as it grows by the streamside or river-bank. The round flowers are a purplish chocolate in color.



THE BROOKLIME

This is another member of the figwort family, and is often found growing with the watercress and water parsnip. It was formerly used as a remedy for the gout. The brilliant blue flowers are very handsome indeed.



THE GREATER SKULL-CAP

The skull-cap, with its bell-shaped flowers of bright blue, growing by the side of the river or in some marshy spot, is always attractive. The leaves are lance-shaped with a toothed edge, and the plant often grows to 18 inches.



THE MARSH CAREX

This is one of the family of sedges, which have grass-like leaves and are found growing in various situations, some in rivers and marshes, others in bogs, and others by the seashore. Most of them need damp situations.

little more than a long pipe-like mudrib with a few narrow leaflets on each side. A much larger species is the hemlock water dropwort, which has broader leaves of a more parsley-like form, and the small umbels of flowers more widely spread, because their foot-stalks are longer. This is a very poisonous and dangerous plant.

This hemlock-leaved water dropwort must not be confused with the water hemlock, or cowbane, one of the same family, with a similar reputation for poisonous properties. It has a stout root-stock, a tall, furrowed stem, and large wedge-shaped leaves that are much divided. Although the white flowers are very small, they are massed in large umbels, and the plant, as a whole, is attractive and imposing.

#### The Hemp Agrimony

A waterside plant that may appear to have some relationship to these umbel-bearers is the hemp agrimony, but it is really a composite. Its flower-heads contain only five or six pale purple tubular florets, instead of the two or three hundred to be found in a head of daisy or dandelion, and these heads form small clusters, which are in turn massed into great clusters at the top of the four-foot stems. The leaves consist of three or five lance-shaped, drooping leaflets, which are somewhat like the leaves of hemp, while the complete leaf has a resemblance to an elder leaf. For this reason the plant is known in Cornwall as the black elder.

#### The Watercress

Here and there we come upon a stretch of streamside where, for some reason, no tall plants grow, and here we shall probably find the watercress, which most of us can recognise by its dark brownish leaves, which are broken up into roundish leaflets, arranged in pairs along the mudrib, and the small white flowers are clustered. A glance at the four petals and the seed-vessels will show us that this is a cross-bearer.

#### The Forget-Me-Not

With the watercress will probably be the forget-me-not, with its strangely curled spray of sky-blue flowers, each with a little yellow round the mouth of the flower-tube. It belongs to the same

family as the beautiful viper's bugloss. Another relation is the comfrey, with three-foot stems, broad, lance-shaped, bristly leaves, and large tubular flowers of yellow or purplish colour, which hang with their mouths downwards.

#### The Yellow Loosestrife

There are so many flowers along the streamside that it is impossible to mention them all. There is the tall-growing yellow loosestrife, no relation to the purple loosestrife, but a member of the primrose family. It has a stem four feet in height, with broad, lance-shaped leaves and pyramids of bright yellow, bell-shaped flowers, though they do not hang as bells do.

#### The Great Valerian

Another tall plant is the great, or cat's, valerian, whose root-leaves are divided into pairs of lance-shaped leaflets, and whose small pale-pink flowers are made conspicuous by massing into clusters. This is the plant whose root-stock cats are so fond of that they tear it up if planted in the garden.

Rats are very fond of the odour of this plant, too, and it is said that rat-catchers often employ the root-stock to entice the rats from their hiding-places, in order to ensnare them.

#### The Figwort

Then there is the figwort, with thick, square stems five or six feet high, with large oblong leaves, and green and brown flowers shaped like a coal-scuttle, because that shape best suits the heads of wasps, who have a liking for its colour and unpleasant smell.

#### Other Flowers of the Stream

The labiate, or mint, family is represented along the streamside by several kinds of mint, which remind us of their presence by their strong, sweet odour; and by gipsywort, skull-cap, and marsh woundwort. Gipsywort has oblong leaves in pairs on its square stem, and whorls of tiny bluish-white flowers dotted with purple. Skull-cap with a similar arrangement of stem and leaves, has its large blue flowers in one-sided pairs. Marsh woundwort is a plant much like hedge woundwort, but shorter, with narrower leaves and paler flowers.

The next story of Plant Life is on page 503.



some of the mounds in the Louvre Museum in Paris and both the French and English nations were at last roused to send explorers to dig down into them to find out what secrets they held. Little pieces of carved marble had been washed out by the heavy rains, and had given an idea of what might be below.

**THE LOST EMPIRES THAT LAY BURIED UNDER THE DUST OF AGES**

Just then the world was waking up to feel real interest in finding out the truth about the past, by collecting and studying the treasures that Mother Earth had kept so long in safety.

In course of time, with infinite labour and difficulty, delays and dangers, the explorers, French and English, succeeded in showing that in the mounds, hidden under the dust of ages lay the remains of the life of the great past in the valley of the two rivers, whose records it had been long thought were entirely lost.

As more mounds and sites are dug over, not only in Mesopotamia, but in the surrounding countries, the study of the remains found in them unfolds the long absorbing story, chapter by chapter. And the surpassing wonder of it is that these records had been buried, out of sight and out of memory, for more than 2,000 years.

Now, the remains of the mounds are very different from those of the tombs of Egypt. To begin with, there are no mummies, no personal possessions like those that brought us into such close touch with the old Egyptians, no vivid coloured paintings, no illustrated papyri. At first sight, when walking about the Babylonian and Assyrian galleries in the British Museum, the man-headed monsters of grey stone, the slabs carved with rather confused-looking reliefs, the clay cylinders and little tablets like cakes of soap, covered with writing, the small roller seals, may almost look uninteresting and dull when contrasted with the dolls and toys, furniture and shoes, of the fine Egyptian galleries.

**THE LITTLE GREY CYLINDERS THAT UNVEIL A WORLD OF WONDER**

But as we look into them the apparent dullness vanishes as by magic, for by their means we are carried right into the gorgeous palaces of the kings of Assyria, whose names and doings are so familiar to us in Bible story, and centuries farther back still, we

are led into the busy country life of old Babylonia, when the rivers, kept in embankments and connected by canals, were covered with boats and barges carrying the produce of well-watered and fertile fields. We can almost smell the sweet hay, and see the chaff flying and hear the cattle lowing, and enter into the bustle of sending these things to market—all more than 4,000 years ago.

By their means, too, we are able to enjoy first hand particulars of the gorgeous temples of the Sun and Moon gods, from whose worship Abraham fled, to found a nation that was to own only the one unseen God.

For a key to the writing that covers so many of the remains of the mounds was found in due course. At first people were almost hopelessly in the dark about the meaning of the endless combinations of arrow-headed signs than they were about the Egyptian writing, and there was no stone found like the Rosetta stone—about which we read on pages 23 and 4782—that could be studied, with a known language like Greek upon it, as a basis for translation.

**A MAN WHO SWUNG OVER A ROCK TO GET THE KEY OF THE PAST**

But a dauntless traveller in the neighbouring country of Persia saw on the face of a high rock an inscription in three languages. His ladders were too short to reach it from below, so he had himself slung down from above, and obtained, with the greatest difficulty, the squeezes—copies made with damp paper which look like the raised letters for the blind—of the writing on this rock at Behistun.

Scholars spent many years in patient labour, comparing these inscriptions with others that were found from time to time. Gradually, by studying a known language that was derived from the same stock as one of the three on the rock, they came nearer and nearer to solving the problem, till at last success crowned their efforts. They had the joy of being able to receive the message of the long-buried past, which, as one of the old kings said, had been written on the stones and clay, for all nations and for all time.

On the stone monsters, and on the slabs and monuments and walls of the temples, the wedge-shaped signs, or cuneiform characters, as they are called, were chiselled out with tools, on the

clay cylinders and tablets they were impressed, while the clay was still moist, by a stylus with a specially shaped point. Afterwards the cylinders and tablets were dried in the sun or in an oven.

#### THE BOOKS OF STONE AND CLAY THAT NOTHING COULD DESTROY

These cylinders and tablets are the books and letters of the country, and in spite of the destruction by fire of the buildings in which they were preserved, in spite of occasional damp to which they have been subjected during their long burial, these old books and letters have remained indestructible.

Now, the story of Mesopotamia has not been like that of Egypt—one more or less unbroken whole, through several thousand years. The language, writing, and religion of the country have not remained the same, nor has it been all the time under more or less the same form of government.

As we pass along the centuries in the valley of the Euphrates and Tigris, we shall hear of an entire change of race in early years, of a mighty division in the country later on, of incessant and terrible wars, not only between the rival kingdoms of Babylonia and Assyria, but with all the nations round. Among these were, on the west, the Hittites, the Syrians, the Canaanites—part of whose land was taken by the Hebrews when they came out of Egypt; and on the east, the Elamites, the Cassites, and the Medes and Persians.

In Mesopotamia, the earliest people that come into history were of the same Mongolian stock as the Chinese and Finns, and they pushed out a still earlier people, of whom little is known. When Menes was building his capital, Memphis, and turning the course of the Nile to make more room for it, as we read on page 4785, there were already many large cities, each with its powerful ruler, near the mouth of the Euphrates—quite a different mouth from that which exists to-day.

#### THE RIVER THAT HAS DRIVEN THE SEA FARTHER AND FARTHER BACK

There is no strong current in the Persian Gulf, as in the Mediterranean, to wash away the sediment of sand and mud brought down by the rivers which once had separate mouths. So all through the years—and it is still going on—new seashore has been formed of that sediment, ever pushing back the

waters of the gulf. Scholars have calculated how long the miles of new seashore have taken to form, and by that means they guess at the age of the old cities which were seaports when first built, but whose sites are now far inland.

This lower part of Mesopotamia, the gift of the two rivers, is often called Chaldaea especially in the Bible, and very old names for it also are the Land of Shumer or Sumer, and Akkad.

The Sumerians and Akkadians, the Mongol people who are believed to have come down from the heights that surround the wide plain, made of it a very fertile land, with good tillage and drainage and watering, so that they could grow corn and dates and figs, and could keep much cattle in the rich pastures. These ancient people were great temple-builders too, as is shown by the bricks and gate-sockets, stone slabs, and other remains found in the old cities of Ur, Shurpurla, Erech, and others.

#### THE OLD DICTIONARIES THAT WE CAN SEE IN THE BRITISH MUSEUM TO-DAY

As long ago as 4,000 years before Christ, their language was quite formed and full, and was expressed in a picture-writing, modified as the years went on, somewhat like that of the old Egyptians.

These Sumerians—all shaven and shorn in the portraits that have come down to us—loved learning of all kinds as much as they loved agriculture and building, and when, about 3,800 years before Christ, they were conquered by a race of quite different stock, with beards and flowing hair, who had long lived to the north and west of them, they were not driven out. They taught these Semitic invaders much of their civilisation, and gradually, through many centuries, the races fused together, and the country became known as Babylonia, from its capital, Babylon, on the banks of the River Euphrates.

The old language, in which were written accounts of the religion and laws, lasted for a long time, and was learnt by the invaders as they settled down, by means of grammars and dictionaries and translations which we can see in the cases of the British Museum to-day. Just as the Roman alphabet is used nearly all over Europe in which to write various languages, so the old Sumerian picture-writing, which gradually developed into wedge, or arrow-headed, signs, was used not only by the Babylonians and

clay cylinders and tablets they were impressed, while the clay was still moist, by a stylus with a specially shaped point. Afterwards the cylinders and tablets were dried in the sun or an oven.

**THE BOOKS OF STONE AND CLAY THAT NOTHING COULD DESTROY**

These cylinders and tablets are the books and letters of the country, and in spite of the destruction by fire of the buildings in which they were preserved, in spite of occasional damp to which they have been subjected during their long burial, these old books and letters have remained indestructible.

Now, the story of Mesopotamia has not been like that of Egypt—one more or less unbroken whole, through several thousand years. The language, writing, and religion of the country have not remained the same, nor has it been all the time under more or less the same form of government.

As we pass along the centuries in the valley of the Euphrates and Tigris, we shall hear of an entire change of race in early years, of a mighty division in the country later on, of incessant and terrible wars, not only between the rival kingdoms of Babylonia and Assyria, but with all the nations round. Among these were, on the west, the Hittites, the Syrians, the Canaanites—part of whose land was taken by the Hebrews when they came out of Egypt, and on the east, the Elamites, the Cassites, and the Medes and Persians.

In Mesopotamia, the earliest people that come into history were of the same Mongolian stock as the Chinese and Finns, and they pushed out a still earlier people, of whom little is known. When Menes was building his capital, Memphis, and turning the course of the Nile to make more room for it, as we read on page 4785, there were already many large cities, each with its powerful ruler, near the mouth of the Euphrates—quite a different mouth from that which exists to-day.

**THE RIVER THAT HAS DRIVEN THE SEA-FARTHER AND FARTHER BACK**

There is no strong current in the Persian Gulf, as in the Mediterranean, to wash away the sediment of sand and mud brought down by the rivers which once had separate mouths. So all through the years—and it is still going on—new seashore has been formed of that sediment, ever pushing back the

waters of the gulf. Scholars have calculated how long the miles of new seashore have taken to form, and by that means they guess at the age of the old cities which were seaports when first built, but whose sites are now far inland.

This lower part of Mesopotamia, the gift of the two rivers, is often called Chaldaea, especially in the Bible, and very old names for it also are the Land of Shumer, or Sumer, and Akkad.

The Sumerians and Akkadians, the Mongol peoples who are believed to have come down from the heights that surround the wide plain, made of it a very fertile land, with good tillage and drainage and watering, so that they could grow corn and dates and figs, and could keep much cattle in the rich pastures. These ancient people were great temple-builders too, as is shown by the bricks and gate-sockets, stone slabs, and other remains found in the old cities of Ur, Shirpurla, Erech, and others.

**THE OLD DICTIONARIES THAT WE CAN SEE IN THE BRITISH MUSEUM TO-DAY**

As long ago as 4,000 years before Christ, their language was quite formed and full, and was expressed in a picture-writing, modified as the years went on, somewhat like that of the old Egyptians.

These Sumerians—all shaven and shorn in the portraits that have come down to us—loved learning of all kinds as much as they loved agriculture and building, and when, about 3,800 years before Christ, they were conquered by a race of quite different stock, with beards and flowing hair, who had long lived to the north and west of them, they were not driven out. They taught these Semitic invaders much of their civilisation, and gradually, through many centuries, the races fused together, and the country became known as Babylonia, from its capital, Babylon, on the banks of the River Euphrates.

The old language, in which were written accounts of the religion and laws, lasted for a long time, and was learnt by the invaders as they settled down, by means of grammars and dictionaries and translations which we can see in the cases of the British Museum to-day. Just as the Roman alphabet is used nearly all over Europe in which to write various languages, so the old Sumerian picture-writing, which gradually developed into wedge, or arrow-headed, signs, was used not only by the Babylonians and

Assyrians themselves, but by many of the nations around. A grand name stands out among the rulers of the newer race that of Hammurabi, King of Babylon about 2,100 years before Christ, a few centuries later than the time when Abraham and his family are believed to have made their hasty departure from Ur of the Chaldees, to wander with their flocks and herds in the lands on the other side of the desert.

**THE JUST LAWS THAT GOVERNED MEN  
FOUR THOUSAND YEARS AGO**

One of Hammurabi's many claims to greatness is that he was a fine law-giver. Some say that his code of laws is the oldest in the world. We can see a cast of the pillar on which he inscribed them in the British Museum. His portrait, with a long beard, is at the top, and shows him in the act of receiving the laws from the Sun God. He set up many copies of the pillar, so that his subjects in different parts of his dominions could find out their just rights before going to law.

Some tablets, round in shape, deal with the measurements of fields and estates, and bring a picture before our eyes of the carefully tilled land. Boundaries were often difficult to keep in such a flat country where floods frequently happened, in spite of all the work done on the embankments, hence the number of boundary stones that have been found of all dates, inscribed with pictures and writing.

Other tablets of a square shape relate to the wages of the workers in the fields, children as well as men and women, and to the levying of taxes and all sorts of business to do with loans and repayments, and the buying and selling of houses, fields, slaves, and many kinds of goods.

**THE GREAT PLATFORMS ON WHICH THE  
TEMPLES OF BABYLON WERE BUILT**

The great industry of the country, besides agriculture, was brickmaking, for stone was very scarce, and clay was abundant. Enormous numbers of bricks were needed, for it was customary to set up the great buildings, temples, and palaces, on huge platforms made of sun-dried bricks, to raise them out of the way of the floods. Harder bricks were used for facing and ornamental purposes, many of which bear the names of kings and accounts of the buildings

they set up. It was the custom, too, to build high and broad walls of brick round the large cities. All the time that building, agriculture, and trade were thus flourishing in Babylonia the people were becoming more and more numerous, and at last they began to go out as colonists northward, in the higher valley of the two rivers, where the country rises towards the hills beyond, and the climate is more bracing.

They built large cities, Nineveh, on the Tigris, being the chief, on much the same plan as of old. They were erected on raised platforms, though natural hills were to hand, and they used the same sort of bricks, though quarries of building stone were easy to get at.

Presently the colonists became strong enough to break off from Babylonia, and their country, under a king of their own, became known as Assyria, which means the land of the god Ashur. This was about the eighteenth century before Christ.

**THE FINDING OF THE TABLETS THAT  
TELL THE STORY OF THE PAST**

The Assyrian character, influenced no doubt by the more invigorating air of the northern country, became more bold and warlike as time went on. Less interest was taken in the peaceful pursuits of trade and farming, and a great passion for war and conquest took its place, partly, perhaps, forced on them by the constant attacks of the powerful nations that lived round about.

As far back as the time of Hammurabi there had been fierce struggles with the Elamites and their northern neighbours, the Cassites, whose power lasted in Babylonia some time after the great division of the two kingdoms. We read on page 4786 how the kings of Egypt gradually extended their power across the Isthmus of Suez and over the states that lay between them and the great kingdoms in the valley of the Euphrates and Tigris. Amenophis III made these states pay tribute, and he took great delight in hunting lions in these countries.

He married a lady of Western Asia, who influenced her son so much towards the religion of her country that he gave up the old Egyptian religion and set up a temple in a new city on the Nile, in which to honour the splendour of the sun's rays. In the ruins of this city were found the famous Tel-el-Amarna tablets,

the tribute of Jehu, King of Israel, consisting of all kinds of vessels of gold Tiglath Pileser III, called by his Babylonian name of Pul in the Bible, lived about a hundred years after Shalmaneser II. His inscriptions and pictured slabs show him to have been very warlike. We see him assaulting a city, the gods being borne off in procession, in another place he is standing with his foot on the neck of a foe.

In still another picture we may see flocks and herds being driven away, and women and children being taken off in a cart. It was Ahaz, King of Judah, who asked Tiglath Pileser III to help him against his enemies, with the result that the terrible doom of being carried into captivity fell first upon the Israelite tribes across the Jordan.

#### CARRYING THE CONQUERED PEOPLE INTO DISTANT LANDS

This plan of carrying away conquered peoples far from their homes, and replacing them with others from some other distant part of the empire, caused bitter suffering through the years of Assyria's greatness, as the wailing dirges of the Jews, which we still sing and read in our services, remind us. "By the rivers of Babylon, there we sat down, yea, we wept, when we remembered Zion."

When Sargon became King of Assyria he took Samaria after a long siege, and sent its inhabitants far away from their homes to settle beyond the Euphrates. From his splendid palace near Nineveh came the fine man-headed bulls, and the cuneiform writing upon them tells of his expeditions, so does that on his cylinders found among other historical records.

The cylinders of Sargon's famous son, Sennacherib—so well known to us in Bible story—may well be full of most interesting details, for he fought many campaigns, and built and restored many palaces. The slabs from one of these, now in the British Museum, are of absorbing interest, for they show in graphic manner how the great palaces in Assyria were set up. We can distinguish the files of men making the platform mound on which the buildings were raised. They mount with loads of stones, bricks, and earth, hurl them down, and then descend to refill their empty baskets and hasten

up again. Great crowds of workers there are in every direction—surely slaves and prisoners, for all are kept in order by overseers and taskmasters with threatening sticks in their hands.

#### THE BUSY SCENE WHEN THE WINGED MONSTERS WERE MOVED ABOUT

Numbers of them are straining at long ropes, hauling a sledge running on rollers, eased by wedges of stones and a powerful lever worked by pulleys. On the sledge is one of the monsters to be set up as "guardian of the king's footsteps." His curls and sash are not in place yet, for he is still in the rough, fresh from the quarry from whence he has come by boat.

We can see the boats or rafts made of trunks of trees lashed together on the river shown close by, with the eels wriggling about, and the little pigs with their mother among the reeds.

But we must turn again to the workmen, hastening hither and thither with all sorts of tools and building materials, and from them to the impassive soldiers keeping guard over the person of Sennacherib himself, gorgeous in patterned cap and fine tunic, standing in his splendid car, with a fine umbrella over his head, and fly-flaps waved by attendants. It makes us think of the Pharaohs watching the rising of the Pyramids.

What heat and dust and noise the whole scene suggests! Over the king's head runs the inscription. "Sennacherib, king of multitudes, king of Assyria, had the bulls and colossi set up with joy. They were made in the land of the Baladon—near the source of the Tigris—for the palace of his lordship, which is within Nineveh."

#### THE GREAT CART THAT THREE HUNDRED MEN COULD NOT PULL

More than three hundred men were needed to pull the cart on which one of the Assyrian bulls was placed, some twenty-six centuries later, when Sir Henry Layard had it dug out of the mound, and astonished the natives by sending it home to England.

There is a picture on another slab of Sennacherib sitting on an armchair sort of throne, receiving from his chief officers the report of the taking of the city of Lachish. Flushed with his success, Sennacherib sent a threatening



message to Hezekiah, King of Judah, who had dared to withhold the tribute he had agreed to pay. As the King of Egypt had encouraged Hezekiah to take this bold course, Sennacherib was furious with him too, and hastened down to the borders of Egypt to settle with him first. But the battle was never fought. By a plague or some other great disaster the flower of the army perished in one night, and Judah, as well as Egypt, for the time escaped.

Under Esarhaddon, the son of Sennacherib, and his famous son Ashur-bani-pal—a name that means 'Ashur creates a son'—the two great nations of Egypt and Assyria came to very close quarters, for the Delta was conquered by the Assyrians, and the terrors of war were carried far up the fertile Nile valley. There is a piteous picture of the destruction of the crops, and the misery of the people, and the plundering of cities and temples among the annals of the conquerors. Ashur-bani-pal was the strongest of all these strong kings and many stories of his riches and greatness lingered through the centuries, much mixed up, as we know now, with legend and fable.

#### THE POWER AND POMP OF THE CONQUERING KING OF MULTITUDES

It is amazing to think of the power in the hands of this one man, as he stands there in his gorgeous clothing, his dazzling ornaments and embroideries and rosettes. King of multitudes—not only over his own people and race in the valley of the two rivers, in their immense cities and fertile fields, but also of the nations round, reaching from the Sea of the Rising to the Sea of the Setting Sun—from the Persian Gulf to the Mediterranean.

He lived through many years of campaigns, in which were conquests, as shown on the pictured slabs, full of cruelties one cannot bear to look at. The campaigns against the Elamites are among the most vivid of the battle-pieces, when Te-umman, the king who had dared to rebel, was slain with his sons, and the mass of the army perished by the sword, by torture, and by drowning.

Among the proud accounts Ashur-bani-pal gives of the successes against the Elamites there is the statement, "With the cut-off head of Te-umman, the road to Arbela I took with joy."

On the only slab among the Assyrian sculptures which gives a picture of quiet home life, Ashur-bani-pal and his queen are shown feasting in a garden, and the cut-off head of Te-umman hangs on a tree just above them.

Ashur-bani-pal passed much of his time, when he was not killing men, in killing animals, and the slabs from his palaces that show him hunting lions, wild asses, and goats are in the finest and freest style of Assyrian art.

Pain, terror, fury, are all shown in lifelike reality, evidently studied from nature, as the king's arrows and spears carry death in the hunting-grounds.

#### ONE OF THE MOST WONDERFUL LIBRARIES THAT THE WORLD HAS EVER SEEN

But Ashur-bani-pal not only carried on the traditions of his family in warlike prowess and in successful daring in the hunting-field; he was a great book collector, like his grandfather, Sennacherib, and his great-grandfather, Sargon. Like them, too, he sought for copies of the old Babylonian books in the libraries and temples of the ancient cities, and set scribes to work copying, repairing, translating, arranging, and cataloguing, as well as writing new annals, till the library in his palace became one of the most wonderful the world has ever seen.

There are some thousands of these books in the British Museum alone, and many have labels beside them giving an account of their contents. So let us now spend a little while in that most delightful of all occupations, wandering round a library, dipping into new books—new to us, though the hands that wrote them, and the eyes that first read them, have been turned to dust for long centuries.

#### HOW THE KING OF HOSTS WROTE HIS NAME IN HIS BOOKS

Ashur-bani-pal wrote his name and address in his books in rather a lengthy and vainglorious form, but it is very interesting. "The palace of Ashur-bani-pal, king of hosts, king of Assyria, who putteth his trust in the gods Ashur and Bélit, and who has eyes which see, and ears which hear. I have written upon tablets the noble products of the work of the scribe, which none of the kings who had gone before me had learned. I have arranged them in classes, I have revised them and placed them in my palace that I, even I, the ruler who

land and the repeopling of the earth. But we must pass on to the grammar books, and those giving lists of signs and their meanings, more than 300 signs are in common use in the tablets, out of nearly 600 which the Assyrian language then contained. What earnest eyes must have pored over the tablets ruled in columns which show the differences in the two old languages, Sumerian and Akkadian, and over other tablets which translate these into Assyrian, with all kinds of exercises and examples, and even proverbs and riddles.

The history section of the royal library is very full, for the kings loved not only to record their doings and conquests, but to hunt up ancient inscriptions on cylinders and tablets, and to set forth dates and names of kings, with particulars of their buildings and wars, copied from various old chronicles. As we read, we realise the great stretch of centuries that goes back to the old Babylonian times, and we learn of the constant disputes about the boundaries of the two kingdoms of Babylonia and Assyria.

#### A KING'S LETTERS TO HIS BROTHER 2,500 YEARS AGO

Of the particulars of the building of temples and palaces there is no lack, and the records of Ashur-bani-pal's own history are endless. We can see letters to him from his twin-brother, whom he made Governor of Babylon; out of this grew a tragedy, for his brother rebelled and failed, and perished miserably in the flames of his palace. It was useless to plead for pardon with Ashur-bani-pal.

There is, indeed, no end to the varied interests of the tablets, and the study of them takes us into the very heart of life in Assyria during the times of its most powerful kings. For, besides all the old legends, and the language and history teaching, there are many hymns and prayers to the gods, showing the religious feeling of those far-off days, and countless letters on private and business matters showing the relations between man and man.

And, beside these tablets, we find others giving directions for making the images of the gods, for their transport, for supplying crowns for their heads, and furniture for their idolatrous worship. With regard to the business letters, the sales of slaves, houses, land, and

crops, the loans and repayments, all show that life was carried on in and around Nineveh under much the same conditions as in the old mother city and country of Babylon centuries before.

#### THE DESOLATION THAT CAME TO THE MIGHTY CITY OF THE GREAT KING

As we pore over the living story of the long-dead past, we notice how many of the tablets are cracked and broken, how many show marks of fire. For there came a day—only about thirty years after Ashur-bani-pal's death—when the quiet library was deserted, and scribes and students no longer passed careful hands along the narrow shelves on which the tablets were arranged, with a well-kept system of catalogues and labels, each class of literature by itself.

For the high tide of Assyrian power had begun to turn even before Ashur-bani-pal's death. Weak kings followed him, and the great nation of the Medes on the eastern borders defeated the hitherto invincible Assyrians, and were only held off from the capital by the sudden rush across Western Asia of the savage hordes of the Scythians, who destroyed everything that came in their way.

But the end was drawing near, and when the Medes joined with Nabopolassar, an Assyrian general commanding in Babylonia, the city of Nineveh, that great city of palaces and temples and books, was taken and destroyed by fire after a siege of two years. That was how the wooden shelves and fittings of the royal library were burnt, and the tablets fell in heaps in the ruins, broken and scorched. This was in the year 609 before Christ, over 2,500 years ago.

#### THE DEAD HEART OF A PROUD EMPIRE THAT HAS UTTERLY PERISHED

The destruction of the city meant death or slavery for those who had made their homes in it, and to the empty, desolate ruins came no fresh settlers. Slowly the stone slabs and monuments became covered with mud, as the soft bricks turned back to clay and earth, and the heavy rains and strong winds did their share in levelling and rounding the mounds, and in bringing vegetation to cover the grave of a city once full of life and toil, luxury and poverty.

And not only Nineveh, but one by one, in like manner, the rest of the cities of Assyria died and were buried, and in time forgotten. For the northern

that of believing that he was no longer a man, but a beast of the field. By no other means, save death, could he have been so stripped in a moment of power, majesty, and all that made life glad. For he went out alone to live in the fields and eat grass.

Daniel, though one of the captive race, acted as regent during the king's illness, having risen high in the state owing to his uprightness and ability. He also lived on through the reign of Nabonidus, who followed Nebuchadnezzar.

From the tablets of these reigns, giving particulars of shepherds and gardeners, sales and transfers of land, the making of canals and the care of the embankments, we can see that the prosperous agricultural and trading life went on in the new Babylonian Empire as it had done in the old.

The links between the old and new empires are many and deeply interesting, we may just mention two. There is a weight in one of the cases in the British Museum bearing an inscription stating that it is an exact copy of one made by Nebuchadnezzar, King of Babylon from 604 to 561 years before Christ, after the standard fixed by Dungi, King of Babylon, just 2,500 years before. Again Nabonidus was delighted to discover monuments of Burna-buriash, one of the writers of the Tel-el-Amarna tablets, a thousand years before his day, and those of Hammurabi, the great law-giver and canal-builder, who lived nearly a thousand years before Burna-buriash, and those of Sargon I, a thousand years earlier than the great king Hammurabi. Nabonidus had a son who was called

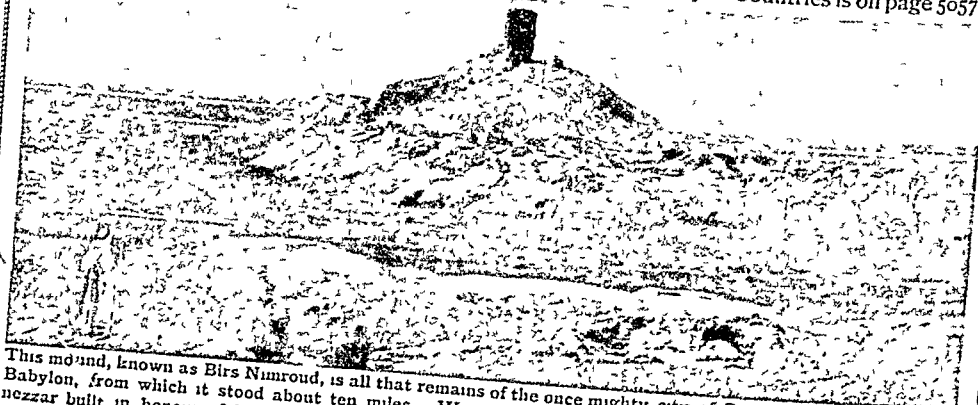
Belshazzar. The very mention of his name rouses us, for who has not heard of the great feast that he gave to a thousand guests, when wine was drunk out of the sacred vessels torn from the Jewish temple? The loud revelry is at its height, when suddenly it is frozen into stillness by the sight of some writing mysteriously thrown upon the palace wall. It is only the names of the common weights of the Babylonian market—like our pounds and ounces. What can it mean? While Daniel is being brought to explain it to Belshazzar and his terrified guests, let us look beyond the immense walls, thick and strong enough, the Babylonians believed, to keep any enemies out.

Enemies had been slowly closing in—men who are described as hardy warriors, riding well, speaking the truth, drinking water, not wine, while the careless feasted. These Persians, closely allied to the Medes, had been silently turning aside the course of the river which ran through the city, so that when the moment came they could pass in on its dried-up bed.

The writing was interpreted by Daniel as follows: "God hath numbered thy kingdom, and finished it. Thou art weighed in the balances, and art found wanting. Thy kingdom is divided, and given to the Medes and Persians."

Daniel's words were fulfilled that very night. Belshazzar was killed, but, as we learn from the cylinders, the Persians entered Babylon without fighting, and the fine city was spared tribulation when it passed under their rule.

The next story of Countries is on page 507.



This mound, known as Birs Nimroud, is all that remains of the once mighty city of Borsippa, the sister city of Babylon, from which it stood about ten miles. We can see the remains of a great tower that Nebuchadnezzar built in honour of his god, Nebo, on what was supposed to be the site of the Tower of Babel.

monster which had last been seen three weeks before by a San Francisco steamer in the North Pacific Ocean. I was invited to join this expedition as a representative of France, and immediately decided to do so. The faithful Conseil said he would go with me wherever I went, and thus it came about that my sturdy Flemish companion, who had accompanied me on scientific expeditions for ten years, was with me again on the eventful cruise which began when we sailed from Brooklyn for the Pacific and the unknown.

The crew of the frigate and the various scientists on board were all eagerness to meet the great cetacean, or sea-unicorn. My own opinion was that it would be found to be a narwhal of monstrous growth, for these creatures are armed with a kind of ivory sword, or tusk, as hard as steel, and sometimes nearly seven feet long, by fifteen inches in diameter at the base. Supposing one to exist ten times as large as any that had ever been captured, with its tusk proportionately powerful, it was conceivable that such a gigantic creature, moving at a great rate, could do all the damage that had been reported.

#### HOW WE FIRST SAW THE MYSTERIOUS TERROR OF THE SEAS

There was among our crew one Ned Land, a gigantic Canadian of forty, who was considered to be the prince of harpooners. Many a whale had received its death-blow from him, and he was eager to flesh his harpoon in this redoubtable cetacean which had terrified the marine world.

'Week after week passed without any sign that our quest would be successful. Indeed, after nearly four months had gone, and we had explored the whole of the Japanese and Chinese coasts, the captain reached the point of deciding to return, when one night the voice of Ned Land was heard calling

"Look out there! The thing we are looking for on our weather-beam!"

At this cry the entire crew rushed towards the harpooner—captain, officers, masters, sailors, and cabin-boys, even the engineers left their engines, and the stokers their furnaces. The frigate was now moving only by her own momentum, for the engines had been stopped.

My heart beat violently. I was

sure the harpooner's eyes had not deceived him. Soon we could all see, about two cables' length away, a strange and luminous object, lying some fathoms below the surface, just as described in many of the reports. One of the officers suggested that it was merely an enormous mass of phosphorous particles, but I replied with conviction that the light was electric. And even as I spoke the strange thing began to move towards us!

#### AT CLOSE QUARTERS WITH THE STRANGE LUMINOUS MONSTER

The captain immediately reversed engines and put on full speed, but the luminous monster gained on us and played round the frigate with frightful rapidity. Its light would go out suddenly and reappear again on the other side of the vessel. It was clearly too great a risk to attack the thing in the dark, and by midnight it disappeared, dying out like a huge glow-worm. It appeared again, about five miles to the windward, at two in the morning, coming up to the surface as if to breathe, and it seemed as though the air rushed into its huge lungs like steam in the vast cylinders of a 2,000 horse-power engine.

"Hum!" said I. "A whale with the strength of a cavalry regiment would be a pretty whale!"

Everything was in readiness to attack with the coming of the dawn, and Ned Land was calmly sharpening his great harpoon, but by six in the morning the thing had again disappeared, and a thick sea-fog made it impossible to observe its further movements. At eight o'clock, however, the mist had begun to clear, and then, as suddenly as on the night before, Ned Land's voice was heard calling "The thing on the port-quarter!"

There it was, surely enough, a mile and a half away, now a large black body showing above the waves, and leaving a track of dazzling white as its great tail beat the water into foam.

#### WHAT HAPPENED WHEN NED LAND THREW HIS HARPOON

Moving rapidly, it approached within twenty feet of the frigate. Ned stood ready at the bow to hurl his harpoon, and the monster was now shining again with that strange light which dazzled our eyes. All at once he threw the harpoon. It struck on a hard body

detached from the submarine, and would then bob upwards to the surface like a cork. The importance of this and its bearing on my story will appear in due time.

It was on a desert island that Captain Nemo had carried out the building of the Nautilus, and from many different places he had secured the various parts of the hull and machinery, in order to maintain secrecy.

#### THE BEAUTY AND FASCINATION OF LIFE UNDER THE SEA

Deeply interested as I was in every detail of this extraordinary vessel, and excited beyond measure at the wonders which awaited me in exploring the world beneath the waves, I had still the feeling of a prisoner who dared scarcely hope that liberty might some day be obtained. But when the metal plates which covered the windows of the saloon were rolled back as we sailed under the water, and on each hand I could see a thronging army of many-coloured aquatic creatures swimming around us, attracted by our light I was in an ecstasy of wonder and delight.

Then days would pass without Captain Nemo putting in an appearance, and none of the crew were ever to be seen. But the Nautilus kept on its journey, which, I learned, took us to the Torres Strait, the Papuan coast, through the Red Sea, through a subterranean strait, under the Isthmus of Suez, to the island of Santorm, the Cietan Archipelago, to the South Pole, on whose sterile wastes Captain Nemo reared his black flag with a white "N" upon it, and through the Gulf Stream.

Of the wonders of the deep, those amazing and beautiful specimens of unknown life that passed before my vision on this strange journey, never before seen by the eye of any naturalist, I cannot here enter into particulars. But it must not be supposed, prisoners though we were, that we never emerged from the interior of the Nautilus.

#### WE ARE INVITED TO JOIN A SUBMARINE HUNTING EXPEDITION

One of my first surprises, indeed, was to be invited by Captain Nemo to accompany him on a hunting expedition in the marine forest that grew about the base of the little island of Crespo, in the North Pacific Ocean. We were told to make a hearty breakfast, as the jaunt

would be a long one. This we did, for we had soon become accustomed to the strange food, every item of which was produced by the sea.

For our submarine excursion we were furnished with diving dresses of seamless india-rubber, fitted on the shoulders with a reservoir of stored air, its tubes opening into the great copper helmet. We even had powerful air-guns and electric bullets, which proved weapons of deadly precision. When inside our diving dresses, we could not move our feet on account of the enormous leaden soles, so that we had to be pushed into a compartment at the bottom of the vessel, and the iron doors secured behind us. Water was then pumped in, and we could feel it rising around us, until the compartment was full, when an outer door opened and we stepped on to the floor of the sea.

For some considerable distance we walked along sands of the most perfect smoothness, and then had to make our way over slimy rocks and treacherous masses of seaweed, before we reached the fairy-like forest under the sea, where all the branches of the marvellous growths ascended perpendicularly.

#### THE MYSTERY OF THE WOUNDED ENGLISHMAN AND A BURIAL IN THE SEA

It was indeed a rare experience for me, who had written "The Mysteries of the Great Submarine Grounds," thus to see, at first hand, the life of which I had only been able to speculate on before. We captured many rare specimens, and shot a fine sea-otter, the only known quadruped that inhabits the rocky depths of the Pacific. It was five feet long, and its skin was worth a hundred pounds.

So constantly was I enchanted with the wonders of our journey that day succeeded day without my taking note of them, but Captain Nemo, for all his kindness, still remained as mysterious as the Sphinx. One day he became violently agitated after looking through the glass at a point indicated by his lieutenant, and I and my companions were immediately imprisoned in darkness, as we had been when first taken into the Nautilus. When I awoke next morning the captain took me to see a wounded Englishman whose head had been shattered, and on my stating that the man could not live for two hours, the dark eyes of the captain seemed to



know who I am! I do not need to see your colours to know you. Look, and see mine!"

So saying, he unfurled his black flag, and then sternly bade us go below, just as a shell struck the Nautilus, and rebounded into the sea. "You have seen the attack," he said more calmly. "I shall sink yonder ship, but not here—no, not here. Her ruins shall not mingle with those of the Avenger."

**WE HAVE HIGH HOPES OF ESCAPE, BUT ARE PRISONERS STILL**

Having no choice but to obey, we all went below, and the propeller of the Nautilus was soon lashing the water into creamy foam, taking us beyond the range of fire. I held my peace for a time, but, after some deliberation, ventured to go up in the hope of dissuading Captain Nemo from more destruction. His vessel was now coursing round the other ship like a wild beast manoeuvring to attack its prey, and I had scarcely spoken when the captain turned on me fiercely, commanding silence.

"Here I am the law and the judge," he said, almost in a snarl. "There is the oppressor. Through him I have lost all that I have loved, cherished, and venerated—country, wife, children, father, and mother. I saw all perish! All that I hate is represented by that ship! Not another word!"

In the face of such fierce hatred it was useless to try persuasion. I and my companions resolved to attempt escape when the Nautilus made the attack. At six next morning, being the second day of June, the two vessels were less than a mile and a half apart. Suddenly, as the three of us were preparing to rush on deck and jump overboard, the upper panel closed sharply. Our chance was gone!

**HOW THE NAUTILUS DESTROYED THE UNKNOWN MAN-O'-WAR**

Next moment the noise of the water rushing into the reservoir indicated that we were sinking, and in a moment more the machinery throbbed at its greatest speed as the Nautilus shot forward under the sea. Then the whole submarine trembled; there was a shock, and then a rending jar above. The terror of the seas had cut its way through the other vessel like a needle through sailcloth! Horror-stricken, I rushed into the saloon and found Captain Nemo, mute

and gloomy, standing by the port panel, which had instantly been slid back, watching with a terrible satisfaction the injured vessel sinking with all its crew beneath the waves. The Nautilus sank with it, so that its terrible captain might lose nothing of the fascinating horror presented by the spectacle of his victims descending to their ocean grave. When we had seen all, he went to his room, and, following him, I saw on the wall the portraits of a woman, still young, and two little children. He looked at them, and as he stretched his arms toward them the fierce expression of hate died away from his face. He sank down on his knees, and burst into deep sobs. I felt a strange horror for this man, who, though he might have suffered terribly, had no right to exact so terrible a vengeance.

The Nautilus was now making its top speed, and the instruments indicated a northerly direction. Whither was it flying? That night we covered two hundred leagues of the Atlantic. Onward we kept our course, the speed never lessening, and for fifteen or twenty days, during which we prisoners never saw the captain or his lieutenant, this headlong race continued.

**OUR FLIGHT THROUGH THE ATLANTIC, AND ANOTHER PLAN OF ESCAPE**

Poor Ned Land was in despair, and Conseil and I had to watch him carefully lest he might kill himself. One morning he said to me:

"We are going to fly to-night. I have taken the reckoning, and make out that twenty miles or so to the east is land. I have got a little food and water, and Conseil and I will be near the opening into the small boat at ten. Meet us there. If we do not escape, they sha'n't take me alive."

"I will go with you," I said. "At least we can die together."

Wishing to verify the direction of the Nautilus, I went to the saloon. We were going NNE with frightful speed at a depth of twenty-five fathoms. I took a last look at all the natural marvels and art treasures collected in this strange museum, a collection doomed to perish in the depths of the ocean with the man who had made it. Back in my own room I donned my sea garments, and placed all my notes carefully about my clothing. My heart

was beating so loudly that I feared my agitation might betray me if I met Captain Nemo. I decided it was best to lie down on my bed in the hope of calming my nerves, and thus to pass the time till the hour determined upon for our attempt. Ten o'clock was on the point of striking, when I heard Captain Nemo playing a weird and sad melody, and I was struck with the sudden terror of having to pass through the saloon while he was there. I must make the attempt, and softly I crept to the door of the saloon and softly opened it. Captain Nemo was still playing his subdued melody, but the room was in darkness, and slowly I made my way across it to the library door. I had almost opened this when a sigh from him made me pause.

He had risen from the organ, and, as some rays of light were now admitted from the library, I could see him coming toward me with folded arms, gliding like a ghost rather than walking. His breast heaved with sobs, and I heard him murmur these words, the last of his I heard: "Enough! O God, enough!" Was it remorse escaping thus from the conscience of this mysterious being?

#### MY DESPERATE DASH FOR LIBERTY AND THE LAST OF CAPTAIN NEMO

Had I not seen it begin with the tears in his eyes at the death of the Englishman whom he had buried in the coral cemetery, and who was doubtless a victim of one of his acts of destruction?

Now rendered desperate, I rushed into the library, up the central staircase, and so gained the opening to the boat where my companions were awaiting me. Quickly the panel through which we went was shut and bolted by means of a wrench which Ned Land had secured. The opening of the boat was also quickly fastened after we had got inside, and the harpooner had begun to undo from the inside the screws that still fastened the boat to the Nautilus. Suddenly a great noise was heard within the submarine. We thought we had been discovered, and were prepared to die defending ourselves. Ned Land stopped his work for the moment, and the noise grew louder. It was a terrible word, twenty times repeated, that we heard: "The Maelstrom! The Maelstrom!" was what they were crying. Was it to this, then, that the Nautilus

had been driven, by accident or design, with such headlong speed? We heard a roaring noise, and could feel ourselves whirled in spiral circles. The steel muscles of the submarine were cracking, and at times in the awful churning of the whirlpool it seemed to stand on end. "We must hold on," cried Land, "and we may be saved if we can stick to the Nautilus."

#### HOW THE SMALL BOAT SAVED US FROM THE TERROR OF THE MAELSTROM

His anxiety now was to make fast the screws that bound the boat to the submarine, but he had scarcely finished speaking when, with a great crash, the bolts gave way, and the boat shot up, released from the larger vessel, into the midst of the whirlpool. My head struck on its iron framework, and with the violent shock I lost all consciousness.

How we escaped from that hideous gulf, where even whales of mighty strength have been tossed and battered to death, none of us will ever know! But I was in a fisherman's hut on the Lofoden Isles when I regained consciousness. My two companions were by my side, safe and sound, and we all shook hands heartily. There we had to wait for the steamer that runs twice a month to Cape North, and in the interval I occupied myself revising this record of our incredible expedition in an element previously considered inaccessible to man, but to which progress will one day open up a way.

I may be believed or not, but I know that I have made a journey of twenty thousand leagues under the sea.

#### WHAT IS THE FATE OF CAPTAIN NEMO AND HIS MARVELLOUS SUBMARINE?

Does the Nautilus still exist? Is Captain Nemo still alive? Was that awful night in the Maelstrom his last, or is he still pursuing a terrible vengeance? Will the confessions of his life, which he told me he had written, and which the last survivor of his fellow-exiles was to cast into the sea in an airtight case, ever be found?

This I know, that only two men could have a right to answer the question asked in the Ecclesiastes three thousand years ago: "That which is far off and exceeding deep, who can find it out?" These two men are Captain Nemo and I.

The next Famous Book is on page 5095.

# HOW TO PLAY THE GAME OF HOCKEY



The first picture shows a useful back-hand stroke to play when in difficulties. The stick is turned round so as to strike the ball with the flat side. In the second picture we see the correct position for rolling in the ball when it has gone over the touch-line. The roller-in must stand quite outside the field of play. Good dribbling is most important in hockey. The ball is hit gently forward, again and again, by the player as she herself runs forward.



This player is stopping the ball in mid-air, she must not hold the ball, but must drop it at her feet and hit it immediately.

By crossing her leg over that of the player behind her, the player in front is fouling. No player must strike or hook an opponent's person, or run between her and the ball.

The ball can be stopped dead with the foot, as the girl in this picture is doing, with the hand, or with any part of the body.



The player on the left has passed all her opponents but one, and is just about to try and hit the ball past the goalkeeper, who stands to the right, and through the goal from a spot within the 15-yards striking circle, which can be seen in the picture circle, which is necessary if the goal is to count.



# A MANTEL-BORDER IN APPLIQUE' WORK

APPLIQUE' work is the application of one material to another. It is one of the many different ways of working used in embroidery, and is an excellent method of introducing a fine big piece of colour into a pattern without all the labour which would be required if we tried to cover the same space with stitches close together.

We are going to make a mantel-border of linen, and decorate it with appliqué in colours. First we must get a yard and a half of cream linen for the mantel-border itself, and a quarter of a yard of green, and a quarter of a yard of brown linen for the appliqué work. We are going to make a little border of boats with sails up all along our mantel-cover, as shown in picture 1, and each will have a brown sail and a green hull.

We must get a cinnamon-colour brown, not a chocolate shade, and a pretty, soft green like a new leaf. We are going to cut out the shapes of the sails and boats from the green and brown linen, and sew them down to the cream ground with embroidery silk.

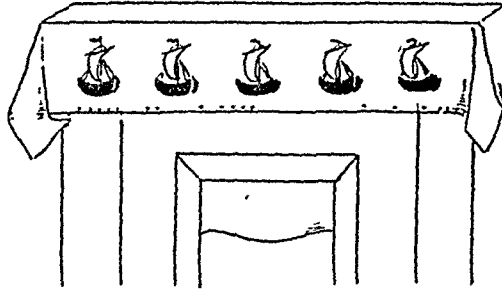
The first thing to do is to cut our cream linen into a piece which will fit the mantel-shelf, leaving a piece twelve inches long to hang down in front and at the ends. This must be neatly hemmed to an inch-wide hem all round with a small needle and No. 60 white cotton. The hemming stitches must on no account show on the front.

It is on this part which hangs down that the embroidery is to be done; the part which lies on the shelf can, if necessary, be kept in place by a couple of drawing pins, one at each end, or, in the case of a cast-iron mantel-piece, it will be found that the weight of the clock or ornaments is quite sufficient to keep the cover from slipping.

The next thing to do is to copy on paper the sail and boat shapes twice the size of those shown in picture 2. This is to be used as a pattern for cutting out the coloured linen.

Five little haps will be enough for a full mantel-board, one in the middle and two at equal distances each side, a few inches apart—say, three inches for a small border

and four or five for a long one. They must be placed about two inches above the hem. First of all, iron out the brown and green linen quite flat, and cut from the pattern, *very neatly*, five little brown sails and five little green boats. We must use sharp scissors, and take care not to fray the edges of the linen. Placing the centre boat in position, as seen

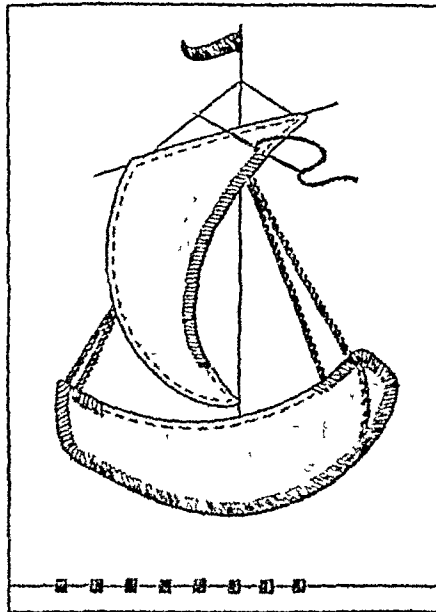


1 The finished mantel-border

in picture 1, we fix it with a pin, while we tack it down with a needle and cotton all round a little way from the edge. We should next fix the sail in the same way, keeping it flat and avoiding puckers. Now we have one complete boat ready for working. The embroidery is done with mallard floss silk, costing three-halfpence per skein. We should get brown and green silks to match the linen, using the brown silk to edge the green linen, and the green silk to edge the brown linen.

The edging stitch is done as shown in picture 2—simply "over and over," very close together so as not to show any of the edge of the appliqué. We must keep it very neat, and the same width all the way round—

that is, about one-sixth of an inch. The appliqué must not be puckered or moved in any way; but this will not be likely to happen if we have tacked it down firmly at first. When both the sail and hull are fixed and fastened by the silk border, we can get a ruler and pencil and draw in on the cream ground the mast-lines shown in the picture; a B B pencil shows up quite sufficiently for working purposes. Then embroider over the pencil-lines in brown silk, using an ordinary crewel-stitch, worked very neatly with the stitches close together, and taking care to put each new stitch in where the last one came out. Thus is the whole secret of keeping a perfectly straight line when using a single stitch.



2 How the pattern is worked

Crewel-stitch is not worked along the material like hemming, but upwards, as we can see by picture 4. We must knot the thread, and, starting from the back of the material at the bottom of the line we are going to embroider, make a stitch one-sixth of an inch long, by pushing the needle through from the front to the back again,

# HOW TO KNOW THE WOODS IN FURNITURE

As we examine the furniture in our homes, the tables and chairs, and bookcases and cabinets, or as we look round a furniture dealer's shop, we see at once that different articles are made of different kinds of wood. Perhaps we have wondered what these various woods were called, what trees they came from, and in what parts of the world they grew, and it is intended to give here a few particulars which will help us to identify the woods of which most of our furniture is made.

## MAHOGANY

Perhaps the most conspicuous of all the timbers used for furniture is mahogany. We can tell it by its deep rich red colour, and it seems to take French polish better than other kinds of wood. There are two kinds of mahogany principally used in furniture making—Honduras mahogany, which has an almost straight grain, and Spanish mahogany, in which the grain is more twisted. This grain gives a dark, rather streaky appearance to the wood, which adds to its richness. But if we look out for a really deep red wood highly polished, we cannot very well mistake mahogany. We frequently see it used for shop fronts and for shop counters. Honduras mahogany comes from Central America and Spanish mahogany from the West Indies.

## WALNUT

Even more common than mahogany is walnut. This has a greyish-brown colour with black brown pores, and is finely veined with darker shades of brown. It is the wood that the stocks of rifles are made of, and if we look at the rifles of soldiers, we shall at once see the colour and grain of walnut.

## ROSEWOOD

Another wood much used for cabinets and grand pianos is rosewood. This is a very richly coloured and marked timber, and is, perhaps, the handsomest of all woods used for furniture. The colour is a reddish brown—redder than

## A BUTTERFLY

A NOVEL little needle-book can be made in the form of a butterfly. If we turn to the coloured plate facing page 2983, we shall see many different kinds of butterflies which may suggest to us shapes and colours suitable for imitation.

Perhaps a scrap of peacock blue velvet is as pretty a material as we can choose. A piece of white nun's-veiling, de-laine, or thin flannel for the leaves of the book and a small piece of stiff calico for the foundation will also be needed.

We first draw the outline of the butterfly on paper, using this as a pattern, and in doing this we shall not find any difficulty. Then we cut out the velvet in which is to make the top of our needle-book, together with four thicknesses of nun's-veiling and one of calico

walnut and browner than mahogany. The texture is very fine, and the surface takes a high polish. The markings, which are of a handsome dark colour, vary very much, and are sometimes like watered silk, and at other times like a beautifully-grained marble. The rosewoods from Brazil are more handsomely marked than those from India.

## OAK

Oak is largely used in the making of furniture, and varies a good deal in its depth of colour. Some kinds are almost of a fawn, or buff, colour, other kinds are so dark as to be almost black, and in between there are various shades of brown. The grain of oak is unlike other woods used for furniture, being close, compact, and straight. The lines are not continuous, but are broken, being almost like dotted lines, giving the wood the appearance of being porous.

## EBONY

Ebony is a black, heavy, hard and shiny wood that comes from an Indian tree related to the date palm, but various other woods from Africa, the West Indies, and Texas are also called ebony. German ebony is simply yew-wood stained black. All these are so alike that only an expert can tell the difference.

## PITCH PINE

Pitch pine, which comes from the United States, is now being used a great deal for the making of furniture in this country. It is a light, yellow wood, wonderfully free from knot marks, with a strongly-marked wavy grain. It is much used in bedroom furniture.

These are the principal woods used in furniture. Of course, much of the cheaper kinds of furniture are made of deal, and are merely stained or veneered—that is, covered with a very thin layer of some better kind of wood. In another part of this book will be found an account of an interesting hobby—that of collecting different kinds of wood.

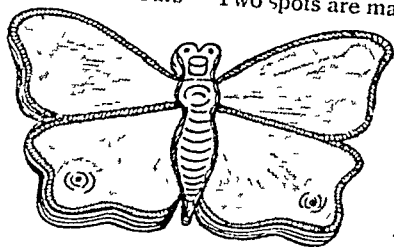
## NEEDLE-BOOK

It may be that we possess the apparatus for doing poker-work, which is described on page 1280. If so, with it we can indent the outline of the wings, and mark the ridges on the body. Two spots are made in the back of the wings,

and pressure with some rounded tool, or even a thumb, will make the shiny markings left white in the picture on this page.

Placing the calico at the bottom, the layers of nun's-veiling next, and the velvet on the top, we take a needleful of brown thread—filoselle or maldard floss would do—and

stitch round the outline of the body through all the thicknesses, with long stitches. If we are accustomed to use brushes and paints, we can get pretty effects with hardly any trouble. A little lustre paint imitates well the brilliancy of butterfly colours.



The butterfly needle-book

# BLINDFOLD GAMES FOR BOYS AND GIRLS

## BUFF WITH A WAND

ONE of the players, called Buff, is blindfolded, and stands with a cane in his hand in a circle made by the rest of the players. The players dance round him while someone plays a quick tune on the piano, but they all stop if the music suddenly ceases, and Buff points with his wand towards anyone in the circle. The player so pointed at takes hold of the end of the wand, while Buff gives a cry in imitation of the voice of some animal or bird. The person holding the wand answers in the same manner, and if, by the sound, Buff can guess who the player is, they change places. If the music starts afresh, the players dance round, and he must try again to guess aright.

## BLIND MAN'S STAB

THE players stand at one end of the room. On the open floor, a few paces away, seven or eight pieces of paper about the size of postcards are scattered. On each of these it would be well to write some figure. One of the players is then blindfolded, and taking a stick, sharpened to a point at one end, makes three strides towards the pieces of paper.

Then he stabs at them with his stick, doing his best to pierce those scraps which he knows have the highest numbers on them. Three thrusts are allowed, after which he is led back to the starting point. If his aims were straight the numbers on the pieces of paper that he hit are reckoned to him. Another player then takes his place, and when each has had a turn, the one with the highest record to his or her name wins. Those stand the best chance who remember, after being blindfolded, where lie the papers with the highest numbers on them.

## JINGLING

IN this game every player except one is blindfolded. The one who can see carries a small bell, and moving about among the rest, jingles it every now and then, slipping away before he can be caught. It often happens that the players in their efforts to grab the jingler, catch one another, and are not convinced of their mistake till they hear the bell again in a distant part of the room. This is a good game it played with care, and not allowed to be too boisterous.

## SPOONS

THE blind man is given two large spoons, and, all the company having seated themselves in different parts of the room, he feels his way about until he discovers one of them. Then, with the two spoons, he feels them gently all over, to see if he can tell who it is he has found. Not a word must be spoken, not a sound must be made. If his guess is correct he hands the spoons to his captive who is blindfolded in turn. The rest of the players should all change places directly the new "spoons" is blindfolded. If not, he or she will remember where they were sitting and will name them easily.

## DRAWING A PIG

EVEN those who think themselves clever artists will be humbled when they play this game. Each of the party has a piece of paper and a pencil. At a word given by the leader, everyone must close the eyes, and draw on the slip of paper the outline of a pig, not forgetting to put in the eye. No one must look at what he has done till the leader gives permission. The result of drawing a pig in this manner is always surprising.

## PUTTING ON THE DONKEY'S TAIL

WE cut out from a sheet of brown paper the figure of a donkey, as large as possible, but without any tail. We fasten this up against the wall or on a screen. Then we cut out the tail, and pass a pin through that end of it which should be attached to the body. Each player in turn takes the tail in his or her hand, and walking up to the paper figure on the wall, *with both eyes tightly shut*, tries to pin it in the position it ought to occupy. The poor donkey will seldom get his tail put on properly, and the mistakes made are very funny. The winner is the player who puts the tail on nearest to its proper place.

## THE BLIND MAN'S BREAKFAST

BEFORE starting this game we ought to spread large sheets of paper on the floor. This being done, two players are blindfolded and seated opposite to each other, just within arm's reach. They are then given a slice of bread and butter each, or bread-and-milk and spoons, and proceed to feed one another as best they can. Their clothes should be well protected, for the spoons generally go anywhere but into their mouths. The blind man's breakfast is the funniest meal in the world.

## BLIND PARTNERS

THIS is a game for four players—two blindfolded and two not. Those who can see take one of the blindfolded as a partner, and all sit down, each at one side of a square table—the blind opposite the blind, with their partners to the right hand. A pack of cards is then scattered freely all over the table and, when ready, the blind players are told to supply their partners with "bricks" for building. They at once set about finding the cards, but to do this only one hand may be used, and they must on no account leave their seats.

The builders, however, may direct them by word of mouth, though by no other means, and while bricks are plentiful, things go fairly well. When they become scarce, excitement begins. The hands of the blind men fly over the table, their partners call out directions as fast as they can, only to see the brick they want carried off by the enemy. Sometimes a card is brushed from the table and time is lost before it can be found. But it must be found, and the pair who have the highest castle, or the most bricks, when all the cards have been used up, have won the game.

# MAKING ANAGRAMS AS A PASTIME

MOST of us know that an anagram is a re-arrangement of the letters of a word or phrase to form a new word or phrase that has some sort of connection with the old. Literally the word anagram means "letters backwards," and originally an anagram was a word or phrase written backwards, as, for example, "evil," which is the anagram of live. But now the name anagram refers to a transposition of the letters in any order, so long as they form a new word or phrase.

## HOW TO MAKE ANAGRAMS

A great deal of amusement may be had in a quiet way at a party, or where a few friends have met together, by arranging an anagram game. So many words and phrases are selected and written on slips of paper, and these are then shuffled or shaken up in a hat, and the members of the party then take them in turn until all have an equal number of slips. Then so many minutes are allowed, and when time is called the competitors must stop, and each reads out his original words or sentences and then his anagrams.

Of course, a perfect anagram is when all the letters have been used up in making the new word or phrase, and no additional letters at all have been used. But if this cannot be done, as many letters as possible should be used.

Playing at anagrams is not merely an interesting and amusing way of spending an evening. It is a useful, intellectual exercise, and does much to help one in thinking, and in the use of words. It is a pastime that has not been despised by the greatest, and many well known anagrams are on record that were made up by distinguished scholars and writers.

## SCRIPTURE ANAGRAMS

At one time, indeed, anagram-making was a serious study, and the Jewish Rabbis and the schoolmen of the Middle Ages believed that great truths could be discovered from the anagrams upon the words and phrases of Scripture.

A famous Latin anagram is upon Pilate's question: *Quid est veritas?*—What is truth? the letters of which rearranged give the sentence: *Est vir qui adest*—It is the man before you. To those who have never tried, it may seem a very simple work to make an anagram, but they should attempt one, and they would find it needs skill and patience. On the other hand, some may think that it would be nearly impossible to transpose a dozen letters to form a word or phrase. When we understand, however, that twelve letters can be arranged in no fewer than 729,000,000 different ways, we see that there are, in the re-arrangements, endless possibilities of forming new words.

## THE KIND OF WORDS TO CHOOSE

In selecting words for anagrams, it is well to take long words with several vowels in them, as these offer greater facilities for anagrams than short words with few vowels. The kind of words that are suitable are the

following: Revolution, which gives Love to rum, Astronomers, from which we get Moon-starers, Crinoline, that gives Inner coil, French Revolution, that can be transposed into Violence run forth. Impatient gives Tim in a pet, from Radical reform we get Rare mad frolic! Old England can be turned into Golden land, and Paradise Lost into Reap sad toils. Surgeon is a short word, but from it we have the anagram Go, nurse! Telegraphs can be transposed into Great helps, and Universal Suffrage into Guess a fearful rum—the v in this case being used for a u. Punishment will give Nine thumps, and Penitentiary, Nay, I repent it.

## ANAGRAMS FROM NAMES

For a variation, the names of the persons present or of well-known men may be selected, and anagrams made upon these. From Disraeli, for instance, can be obtained the anagram, I lead, sir! but those opposed to this statesman's policy made their anagram upon his name: Idle airs.

After the result of the general election of 1880, a political opponent turned The Earl of Beaconsfield into Self-fooled, can he bear it? Charles Dickens gives Cheer sick lands, and Douglas Jerrold, Sure, a droll dog. Two good anagrams from Horatio Nelson are So! nation! I hero, and Honor est a Nilo—His honour is from the Nile. From Lord Palmerston we get So droll, pert man, and from Florence Nightingale, Flit on, cheering angel. Another good anagram on Florence Nightingale is Cling on, feeling heart. William Ewart Gladstone has provided several excellent anagrams, such as the following: A man to wield great wills, Go, administrate law well, G, a weird man we all list to, I'll waste no glad war-tune.

Or, for a further change, the names of places, or flowers, or birds, or, in fact, any class of words may be taken, and will provide equally interesting amusement and similar scope for ingenuity to the company present.

## WORDS FOR ANAGRAMS

Here are some single words from which good anagrams can be made: Catalogues, Christianity, Crocodile, Lawyers, Melodrama, Midshipman, Parishioners, Presbyterian, Soldiers.

The following words have the article before them, and thus, of course, must be used in the anagram: The calceolari, The nightingale, The turtle dove. Here are two phrases for making into anagrams: Is pity love? Poor house.

The following names of well-known people also provide good scope for anagrams: John Abernethy, Thomas Carlyle, Charles James Stuart, Henry Wadsworth Longfellow, Alfred Tennyson—Poet Laureate, Sir Robert Peel, William Shakespeare, Robert Southey, George Thompson. In case any of us find difficulty in forming anagrams from these words and phrases, the solutions to all of them are given on page 511.

this historic stone, 186 tons in weight, raised from the bottom of the sea and placed upon the Thames Embankment. The inscriptions on the stone, which is over 68 feet high, tell about the conquests of the Egyptian king.

#### A FAMOUS MONUMENT IN LONDON THAT IS BAD IN EVERY WAY

Of very different character is the Albert Memorial in Kensington Gardens, one of the most inartistic monuments in England. It was built from Sir Gilbert Scott's designs in 1878. Like the top of a church steeple planted on the ground, a huge Gothic canopy of coloured marbles, stones, and gilded metals enshines Foley's colossal bronze statue of the Prince Consort. The statue itself is bad, because it is badly designed, heavy and unlikelike, and because it is gilded. Had it been left ungilded, the bronze would have softened the hard lines and made the unnecessary and bad details less noticeable.

As it is, the gilding is a blaze of ugliness that makes the bad shape of the statue more noticeable. At the corners of the steps which surround the monument are four groups of marble figures which represent four continents: Europe, by Macdowell, Asia, by Foley, Africa, by Theed, and America, by Bell. But the chief thing to remember about the Albert Memorial is that it is *bad*.

After seeing this it is a pleasure to look at the beautiful arch at the Hyde Park Corner end of Constitution Hill. This arch is by Decimus Burton. It is simple in design and beautiful in proportion—two most important things in art. There is nothing ugly about this arch—no crowd of detail and unnecessary decoration which would spoil it.

#### THE GOOD POINTS AND THE BAD POINTS OF THE NELSON COLUMN

Let us now examine the Nelson Column in Trafalgar Square. It was designed by Baily, and consists of a huge Corinthian pillar, or column, copied from one in a Roman temple, supporting a statue of Lord Nelson. The column itself is beautiful, but the statue is not remarkable. The chief fault of the work is that the column is too high for the statue. On the square base are four reliefs representing Nelson's great naval victories, these reliefs are made of the bronze obtained by melting cannon taken from the French. The

column was erected in 1843, but the four colossal lions by Landseer, which are the most beautiful part of the monument, were not added till 1871. Their shape is very fine, and the modelling of the beasts is good, restless but full of energy, simple, and grand.

Perhaps the oldest, and certainly the largest, monuments in the world are the Pyramids of Egypt. There are many pyramids in Egypt and in other countries, but the three largest of the nine pyramids at Gizeh are so much more imposing than all the rest that they have become known as *The Pyramids*. Largest of all is the one built by Khufu, who lived nearly 4,000 years before Christ. It is the largest building in the world, and was originally over 480 feet high. Very near these pyramids is the great Sphinx, a monster lion with a human head of strangely fascinating and mysterious expression. Of the Pyramids and Sphinx we read on pages 4779 and 4786, so that we may pass them over here.

#### THE GREAT GATE OF LIONS, THAT WAS THOUGHT TO BE THE WORK OF GIANTS

Perhaps the oldest sculptured gateway in the world is the Gate of Lions at Mycene—now Argolis—in Greece, not far from Corinth. This gate is of great size, and on a flat stone above the gateway are carved two lions standing with their forelegs raised rather like our lion and unicorn on the royal arms. The gate was discovered by Dr Schliemann in 1874. On account of the size of this gate, and other remains near it, it was supposed by the ancient Greeks that it was built by the Cyclops, a race of giants, and thus the gate is still known as an example of Cyclopean work.

Not very far from here is the Choragic Monument of Lysicrates at Athens—a well-known small temple, or shrine, erected in honour of Bacchus by the *choregos*, or winner of the prize for music or acting at the Dionysian Festival. It was a custom in the days of the Greeks to have competitions in these arts between the different tribes.

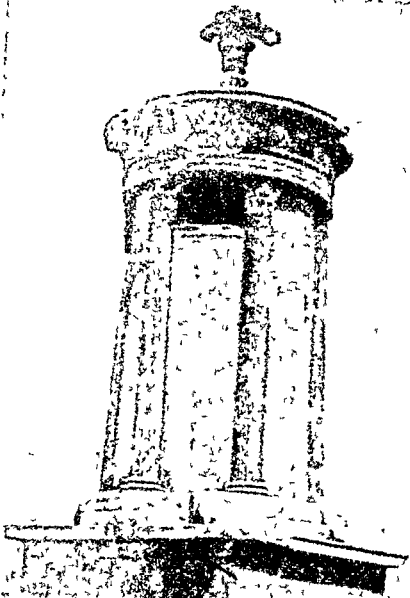
On the top of this shrine was placed the tripod, or three-legged bronze bowl, which was given to the *choregos* as a prize. The very beautiful monument has a square, box-like base, upon which stands the main body of the shrine, which is round, and in shape something

# THE OLDEST STATUE IN THE WORLD

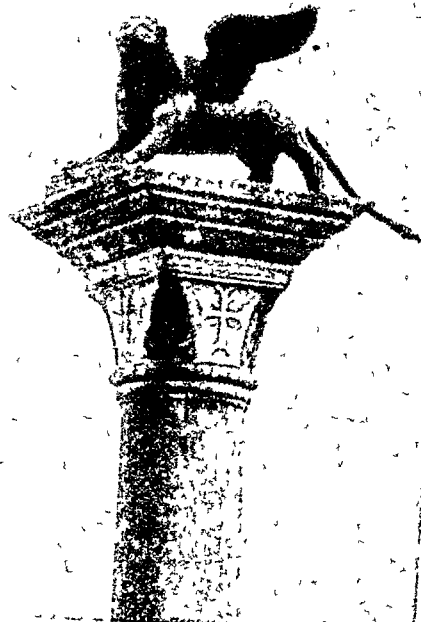


The great Sphinx at Gizeh in Egypt, is carved wholly from a mass of solid, natural rock, with the exception of the forepaws, which are built up with blocks of stone. Its date is unknown, but it is probably the oldest statue in the world, and certainly it is the biggest single sculptured figure on earth. It measures over 100 feet long. It is crude and massive, and without detail of any sort. It is very impressive and awe-inspiring on account of its stupendous size and its strong outline. The Arabs call the Sphinx the Father of Terror.

# ANCIENT AND MODERN MONUMENTS



The Choragic Monument of Lysicrates at Athens, though small, is one of the finest examples of the Greek Corinthian style, or order. The proportion which the columns bear to the entablature that rests upon them is very beautiful, the pillars are of a size and height that go exquisitely with the round top and roof.



The Lion of St. Mark is supported upon a tall and slender column splaying, or spreading out, at the top, the capital and the cornice above making a continuous line curving outwards. The winged lion is pleasant only in general outline. Its legs are planted wide apart, and the tail trailing behind gives the feeling of security.

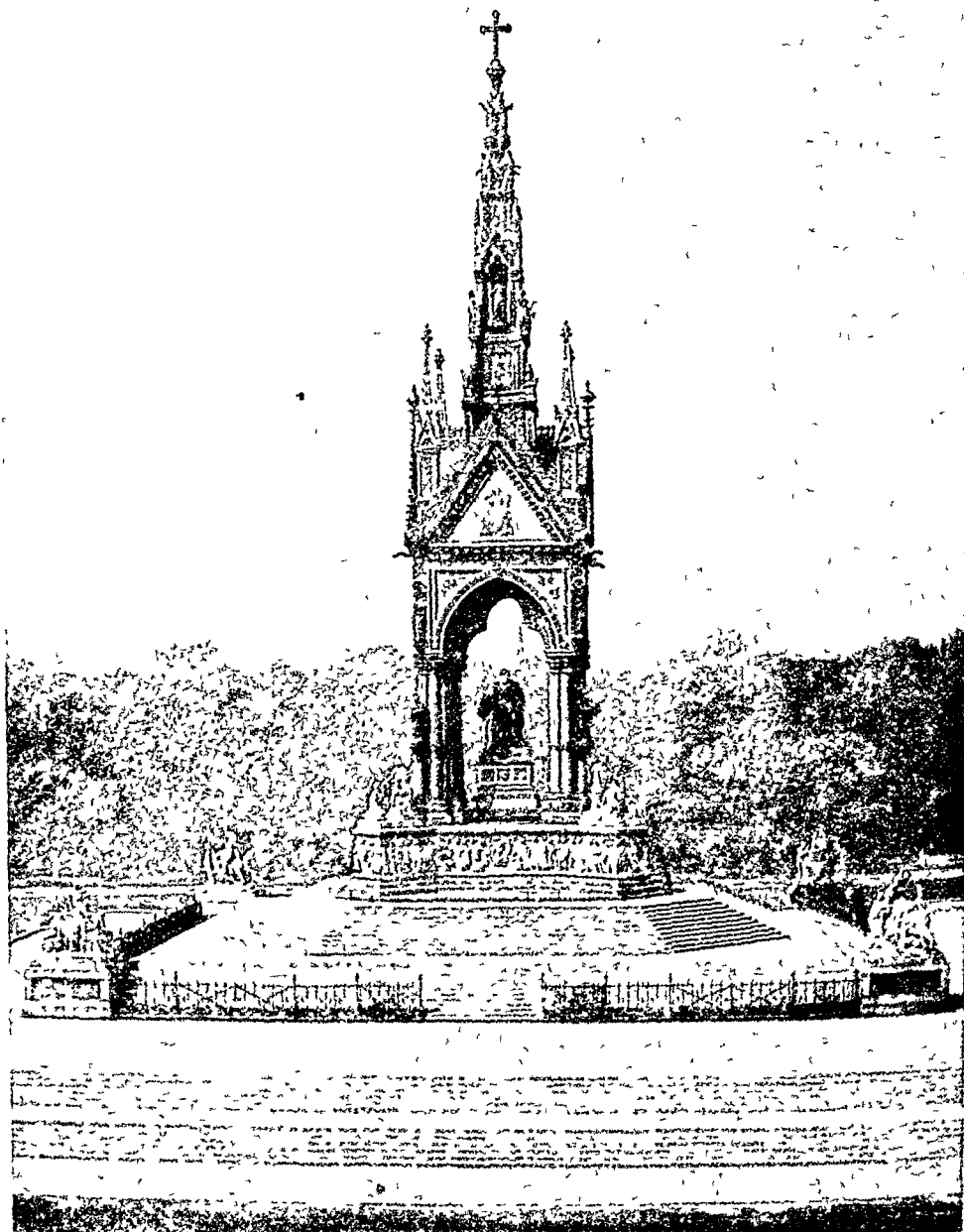


The two lions over the gate at Mycenae, filling perfectly, with the pillar between them, a nicely proportioned triangle, form a design that could not well be improved. The straight lines and big shapes give an effect of strength that is not only satisfying in itself, but is in entire keeping with the wall and gateway which it decorates. The masonry is rough hewn and huge, the lions are huge also, and, like the stones, strong in outline and square in the shapes of their trunks and limbs.



The tomb of Canova is just like Canova's own work, in fact, it was done by his pupils. It is hard in outline and bad, for instead of the figures being modelled like poetry, they are too natural—too full of detail. We do not speak like poetry. Poetry tells of real life, but in beautiful phrases. Sculpture should be the same. It should represent life, but it should be full of beautiful softness, and the figures here should be held more together in groups and shapes, like the words in poetry.

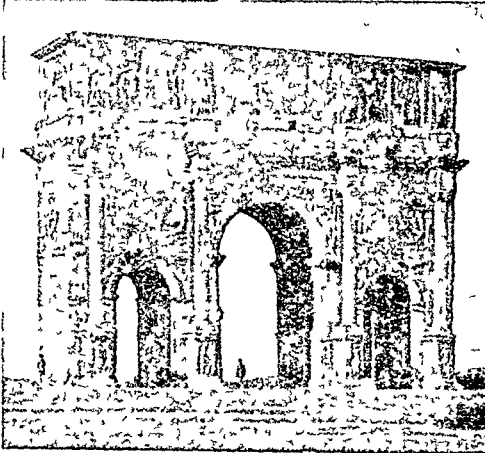
# ONE OF THE WORLD'S WORST MONUMENTS



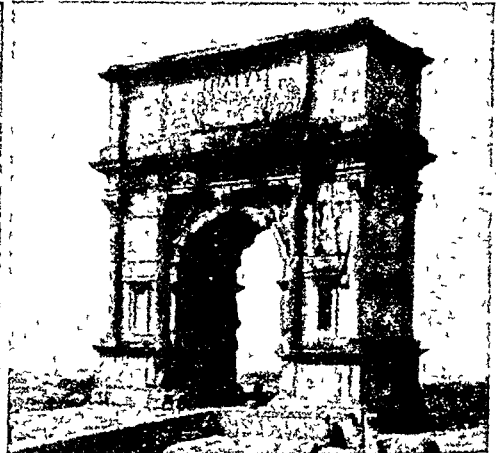
The Albert Memorial is among the worst monuments in the world. It is bad because it is a mass of most intricate and gaudy detail. It looks spiky and hard. The mixture of all sorts of colours, stones, and metals is vulgar and florid. There is no simplicity, no strength, no unity in it. It is weak and ugly and extravagant. As a matter of fact, it is as ugly and rude as a woman who loads herself from head to foot with cheap jewellery. The photographs on these pages are by Messrs. F. & J. Smith, Ltd. and are published by the London & North Western Railway Company, and the Art Reproduction Company.



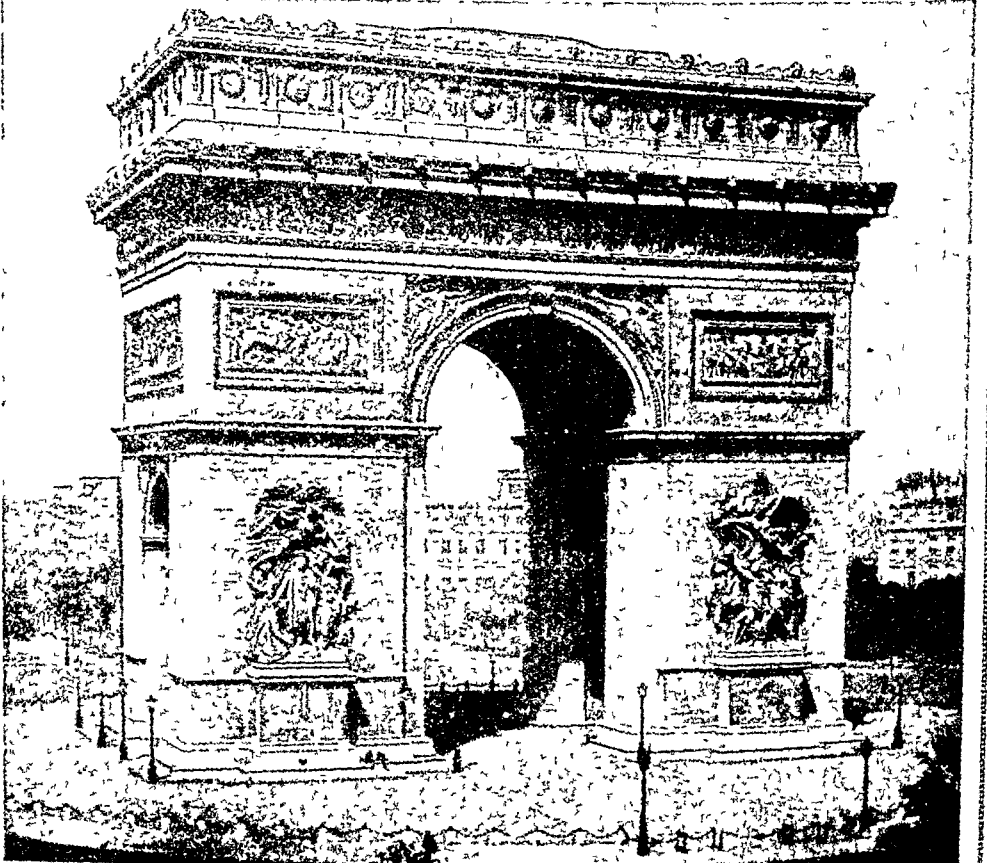
# THREE FAMOUS TRIUMPHAL ARCHES



This Arch of Constantine is the finest example in the world of a three-span arch. The proportions are exceedingly fine, but the elaboration just above the arches spoils it. It would have been better if, like the Arch of Titus, it had been simpler. The columns are slender and good. The shape of the whole is splendid.

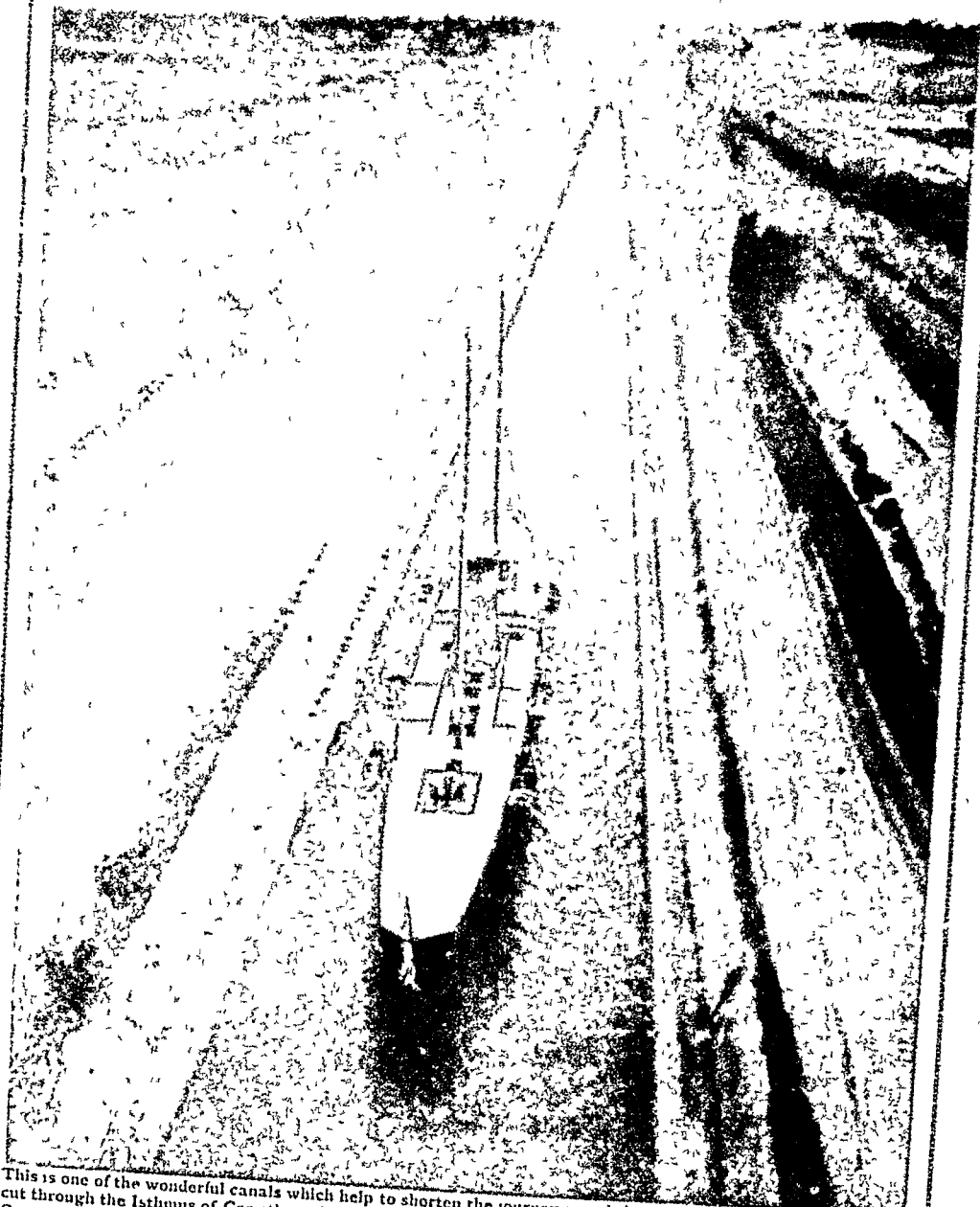


The Arch of Titus is divided into pleasing shapes, big, simple, and strong at bottom, thinner sides that have less weight above, beautiful columns at the corners to support the cornice, which binds the whole together, and a perfectly plain top, which, by its plainness, gives more value to the little decoration.



Compare this Arc de Triomphe in Paris with the Arch of Titus above. It is very bad. The sides are too thick and heavy. There is no thickening at the base, so it is weak. The moulding just below the sculptured groups is insignificant. The top is over-decorated, and so far too heavy. The frames of the sculptured panels are too big. The groups of sculpture are bad because they lack repose and strength. The whole arch is top-heavy.

# THE CANAL THAT NERO DREAMED OF



This is one of the wonderful canals which help to shorten the journey round the world. It is the Corinth Canal, cut through the Isthmus of Corinth, and it enables ships to go to Athens and thence on through the blue Aegean Sea to Constantinople without having to sail round the rocky coast of Morea, in the south of Greece. When the Roman Emperor Nero was young and energetic, he caused this canal to be begun, but the work was put off and never resumed until our own time. It is 1½ miles long, and was cut through limestone rock in one part 250 feet above the level of the sea. The canal is 100 feet wide and 26 feet deep, and it saves ships 200 miles. Sailing through it from Greece, the traveller comes out in full view of the city where Paul made tents.

The photograph is by Messrs. Underwood & Underwood, London.

the ball is so elastic. The ball is filled with gas, or, rather, a mixture of several gases, which we call air. We can soon notice how much this ball bounces if we compare an ordinary soft india-rubber ball with another one which has a small hole punched in it.

So far as the indiarubber is concerned, the two balls are practically the same, but their bounce is very different—unless we happen to bounce the second ball just on the place where the hole is. If we do not do this, the air is expelled from the hole when the ball is bounced, and we find that it bounces very little, because the elasticity of the ball is so poor. But the other ball bounces exceedingly well, because, when it is bounced, the air in it is not squeezed through any hole, and thus gives the ball its elastic rebound.

#### ARE THE KNOBS ON SEAWEED FILLED WITH AIR?

What we call air is a mixture of various gases, and any gas may be called "air." For instance, when carbonic acid gas was found to come out of heated chalk it was called "fixed air"—the air, or gas, that had been fixed in the chalk. So we may, perhaps, give the name of air to that which we find filling the knobs on seaweed, and, like the air we know so well, it is certainly a mixture of gases, but it is not the same mixture as our atmosphere.

The question may be asked, How does this air get into the knobs of seaweed? A seaweed, like all other living things, must breathe. This means that it takes into itself, through its surface, some of the oxygen dissolved in the sea-water around it. It also produces carbonic acid gas within itself, just as we do, though the whole process goes on very slowly indeed in the seaweed, as compared with ourselves. From the facts that have been mentioned we should therefore expect to find that the mixture of gases in the knobs on the seaweed shows that it is obtained partly from outside and is partly produced from within.

We must remember, also, that a piece of dead or dying seaweed, in surroundings unnatural to it, and exposed to the air and the sun, will undergo changes, and several of the compounds that make up its body will yield gases that may contribute to the contents of the knobs.

#### WHY DO OUR HEARTS BEAT SO MUCH WHEN WE ARE NERVOUS?

The answer to this question depends on our knowledge of one of the most interesting facts in the body. The beat of the heart goes on in consequence of the orders of certain nerve-cells that lie inside the heart itself. The brain, therefore, may be asleep or attending to something else, or poisoned, yet the heart will go on beating.

But as the beat of the heart decides the flow of the blood, the brain, which is the great master and controller of the body, must have some control over the heart. Certain special nerves therefore run down from the brain, through the neck on each side, to the heart. One pair of these nerves has the power of making the heart beat slower and weaker, and the other has the power of making the beat quicker and stronger.

When we are frightened, the brain sends certain orders down through these nerves, which have the effect of making the heart beat strongly and quickly. When something occurs to terrify a creature, the best thing it can do, as a rule, is to run away. Now, we run with our hearts far more than with our legs, and the real secret of this beautiful working of the body is that the increased force and speed of the heart-beat, when we are frightened, is the body's attempt to make provision for running.

#### WHY DO OUR HEARTS BEAT FASTER WHEN WE RUN?

When we run we are doing work, for we are moving a certain amount of matter—our bodies—at a certain speed through space. The power we spend has to come from somewhere, and, indeed, what happens is that large quantities of sugar and other things are quickly burnt up in our muscles.

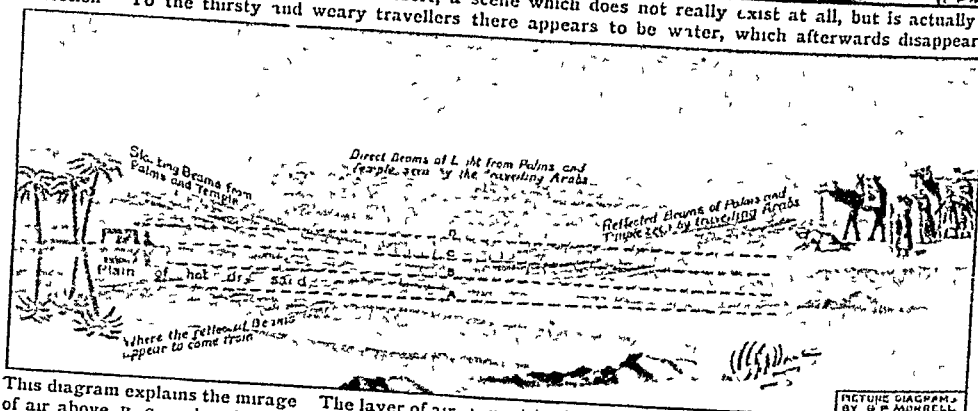
The result of their burning is the gas called carbonic acid, which is a poison to all animals and human beings. The blood becomes quickly filled with far more of this gas than usual, and means must be adopted to get rid of it quickly enough, or we should die of poisoning by this product of our own lives.

If we examine the air coming from the lungs of a man who is running or doing hard work with his muscles, we find that there is, perhaps, ten times as much carbonic acid in the breath

# SEEING WHAT IS NOT THERE

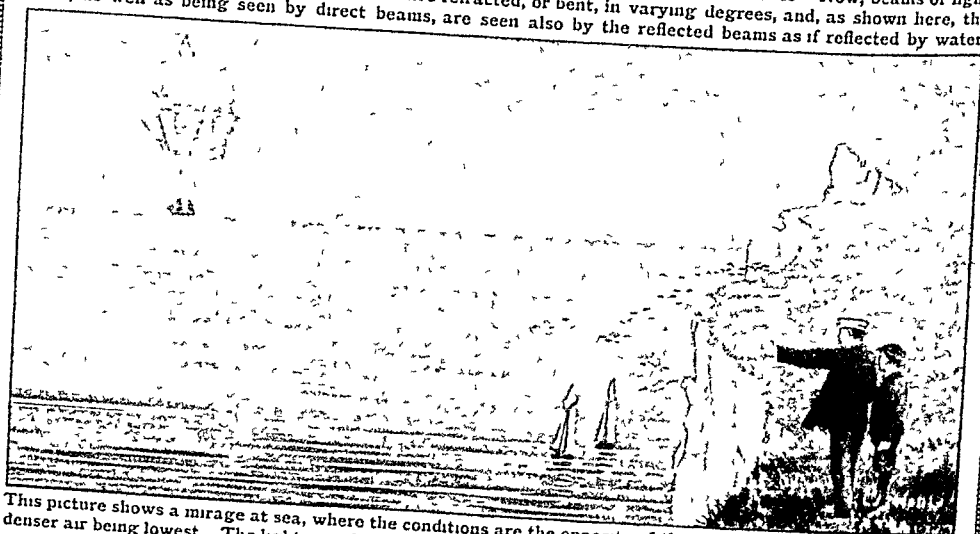


In this picture we see a mirage in the desert, a scene which does not really exist at all, but is actually a reflection. To the thirsty and weary travellers there appears to be water, which afterwards disappears.



PICTURE DIAGRAM BY G. P. MURRELL

This diagram explains the mirage. The layer of air, A, next to the hot sand, is very warm, and different layers of air above, B, C, and D, have different temperatures, and therefore different densities. Now, beams of light passing through gases of different densities are refracted, or bent, in varying degrees, and, as shown here, the trees, as well as being seen by direct beams, are seen also by the reflected beams as if reflected by water.



This picture shows a mirage at sea, where the conditions are the opposite of those in the desert, the colder and denser air being lowest. The light rays from the ship strike upon layers of different density in the upper air and are refracted downwards. When the densities vary much, several images will be seen, some of them inverted.

give it all our attention, we may think so completely of the one thing alone that the particular part of our mind in the background which usually reminds us that we have something else to do may not be heard at all

CAN WE EVER STOP THINKING?

As long as we are awake there is something going on in the mind which may or may not be thinking in the proper sense of the word, but which, if not thinking, is at any rate feeling and willing

If we stop all thinking and feeling and willing, then we are no longer awake, but asleep. At least, that appears at first to be true. But when we carefully study what happens during sleep, we find reason to suppose that some parts of the brain are always more or less awake. So, if by thinking we mean simply being more or less awake, then the answer probably is that, from birth to death, this kind of thinking is, to a greater or less extent, going on all the time

But the word thinking is best used to mean real thinking, putting two and two together, and really arguing from one thing to another, asking the why and wherefore, and trying to find out the answer. That is real thinking, and the difficulty for most people is not how to stop it, but how to begin it, and how to keep it going on when it is begun. We make a very great mistake if we suppose that all the time we are awake we are thinking in this sense of the word

WHY IS OUR RIGHT HAND STRONGER THAN OUR LEFT?

It is quite certain that the difference in *strength* between our hands is not natural, in the sense of being a thing decided from our birth, but is the result of the different treatment that our two hands have received since

Difference in *skill* is another matter, as we read on page 1989. There is a simple instrument, meant to be squeezed in the hand, which measures the strength of the grip of the two hands, and it shows that the right hand is considerably stronger in right-handed people and the left hand in left-handed people. So that we should really have added to our question the words "if we are right-handed." These differences between the hands do not exist if we use the two hands equally. Some

children are very carefully looked after, to see that they become what is called *ambidextrous*, using both hands alike, and then hands are equally strong.

We see, then, that it makes a great deal of difference to our muscles how much they are exercised. There is no doubt that the difference in the strength of the two hands depends on the size of the muscles, for a tape measure put round the two forearms, or even a pair of gloves put on, will often show the difference that use or exercise has made in the size of the hands

It is true of every part and every power of our bodies that they can be improved by use. On the other hand, it is no less certain that, for every part and power of the body or the mind of everyone, there is a limit which, if we are wise and careful, we may reach, but beyond which we can never go

WHAT MAKES A ROUGH SEA CALM WHEN OIL IS POURED UPON IT?

The explanation lies in one of the contrasts between oil and water, which we can readily observe for ourselves even when we have a small quantity of the two liquids in a couple of bottles. If we shake the bottle of oil, we notice how slow its movements are and how difficult it is to make it splash. It is what we call a viscous liquid. Water moves much more easily, and we call it a mobile—that is, movable—liquid. Oil calms troubled waters because it is so viscous. But it is very difficult to understand what it is that makes one liquid viscous and another mobile. Partly it has something to do with the size of the molecules of the liquid. In the case of oil of any kind, the molecules are very large

CAN A FLY SEE ALL WAYS AT ONCE?

A fly cannot see quite in all directions at once, because, whatever the shape of its eyes, one part of them, at any rate, must lie against the fly's head, and in that direction, at least, the fly cannot see. But it is true that the eyes of flies, and of many other insects, can see in far more directions at once than ours can. This is especially the case where the eyes are not flat, but very much rounded and bulging

We must not suppose that this means clear vision at one and the same time in all these directions; but it does mean that, while looking in one direction,

may use a speaking-trumpet for our own voices, if we want to speak at sea or to a large company in the open air. Or, on the other hand, we may put the trumpet in our ears, as deaf people do, where it acts in just the same way, reflecting towards the canal of the ear a certain amount of sound which would not otherwise have reached it. Our own ears act as reflectors of this kind in a smaller degree.

The making of echoes by walls is really just the same as the action of a trumpet, only when the wall is far away the reflected sound comes so long after the first sound that we hear two sounds. Walls help a speaker if they are close beside or behind him, but not otherwise.

**WHY WERE KINGS IN THE OLD DAYS SO CRUEL AND HARD?**

Kings are naturally very much like other people—that is to say, when a little boy is born to a king and queen, he may be likely to grow up kind-hearted or cruel-hearted, or somewhere in between, just as other people may. And there certainly have been many kind-hearted kings, but there are various reasons why the records of history are full of the names of cruel kings.

For one thing, there is always more to say about cruelty and wickedness than there is about kindness and goodness. The newspapers of to-day give a very wrong idea of the proportions of good and evil in the world, and history books also tend to give a wrong idea in this respect.

Again, almost the only way in which, in times gone by, a king could keep his throne was by being merciless. Young kings who had any tenderness in them, and hesitated to kill their enemies, were soon killed or dethroned themselves. Where power extends to ruthlessness and cruelty, we shall not expect mercy and kindness long enthroned.

But now kings know that their only "divine right" is the divine right to be kingly men, which we all have, and that the old days are gone for ever.

**ARE NEW CLOUDS ALWAYS BEING MADE?**

Clouds are always being made and unmade. No cloud lasts for more than a short time, and the surface of a cloud all round is constantly changing. The making and unmaking of clouds depend, from moment to moment, upon a great many different conditions in the air,

for instance, the temperature of the air, the amount of moisture it contains, the nature and temperature of winds, the amount of dust in the air, and the state of the electricity in the air at the time.

These things are changing from moment to moment; indeed, it is not possible that they can all remain the same for two moments together. The earth never ceases to spin, and this means that different parts of the air are being brought under the rays of the sun or out of them. Even though the sun is shining on parts of the air for many hours at a time, the spinning of the earth makes it shine at a different angle, which alters the force of its rays. As the sun shines it warms the air, and so increases the amount of water which it can hold in the form of transparent water-vapour rather than in the form of clouds.

So clouds are always being made and melted here and there, as no one needs telling who has been able to spare time to watch the face of the sky steadily and carefully for even a short period.

**WHY WILL NOT WATER BURN AS OIL DOES?**

There are some oils and some spirits, which have the appearance of water to the eye that burn. So we can understand that it was a great puzzle for many centuries why one fluid should put out a lighted match applied to it, and another should promptly burst into flame.

We now know the answer perfectly, but less than a hundred and fifty years ago the united wisdom and knowledge of all mankind had no key to it. That was because men did not know what burning was, and until we understand the nature of combustion, or burning, of course we cannot explain the differences in various cases.

We now know that burning is the chemical union of some other elements with oxygen. The other elements are able to take up a certain amount of oxygen, and no more. When they have taken up all they can, they are completely burnt, and will not burn any more. Water will not burn because it is already burnt, it is the result of burning hydrogen with oxygen. Oil and spirits burn because they contain a large quantity of atoms which can combine with oxygen, and have not yet done so. In all oils and spirits

## WHY IS A RIVER ALWAYS MOVING?

The water of a river, like everything else upon the surface of the earth, is always being pulled as far as possible to the centre of the earth by gravitation.

Even when a river or a stream is rushing to the downwards it still stays upon the surface, but we must remember that the low part of the surface that it reaches is nearer the earth's centre. When anything falls towards the centre of the earth it loses some energy which it had in it before it fell, and we must ask where the water got this energy from—the energy which, for instance, will turn a mill wheel.

In other words, what raised the water in the first place, and never fails to raise more water? It is the sun. And so the answer to our question, "Why is a river always moving?" is really: "Because the sun is always shining." The sun's power raised from the sea the water that falls as rain, and makes rivers. Therefore it is really the sun that turns the mill-wheel, and it is also the sun that opposes us when we try to swim or row upstream.

## WHAT KEEPS THE AIR ROUND THE EARTH?

There is nothing whatever but gravitation to keep the air round the earth, and there are many things at work to make the air leave the earth. As the earth sweeps through space in its curved path, every part of it is always tending to move straight on instead of round the sun. And as the earth spins upon itself, the atoms of the air tend to be thrown off like the raindrops from a spinning umbrella. And if the movement of the atoms or molecules of gases in the air becomes quicker than a certain rate, they will fly off into space. There is almost certainly a leakage going on all the time, so that, in fact, the air is not being completely kept round the earth.

If the earth were smaller, it would not be able to hold round itself so dense an atmosphere as it does, and it would lose its atmosphere more quickly.

This is probably what has happened in the case of Mars, which is older than the earth and smaller, so that it has had more time for its air to leak away, and less power to keep it. So Mars has only a very thin atmosphere. And the moon, which is too small altogether, has now no atmosphere at all around it.

## WHY CANNOT WE SEE THE SPOKES OF A WHEEL WHEN IT GOES VERY FAST?

The reason is that the marks made, so to speak, by anything upon the retina, or custom, at the back of the eye do not instantly fade away, but last for a small fraction of a second. The real marvel here is that these images on the retina last for such a short time, and that it is so quickly ready to receive new ones. Still, the images do last for a little while, and if a wheel goes round at all quickly, the marks made by the spokes at the different parts of their journey run into each other, and we see no distinct spokes at all, but only a faint blur inside the circle of the wheel.

The first answer to this question that would naturally suggest itself to our minds is, that the spokes of the wheel cannot be seen when it turns quickly because they are moving too fast for the eye to catch. That, however, is not the case at all, and a simple experiment will show that the first explanation is the true one, and not this, likely though it sounds. If we set a wheel spinning in darkness, and then have a single flash of electric light just for an instant, we catch a glimpse of the spokes of the wheel all seeming fixed in one place, as if the wheel were not moving at all.

## WHAT WOULD HAPPEN IF THERE WERE NO FORGIVENESS IN THE WORLD?

The greatest of all facts about men and women is that we are social beings. This is one of the deepest roots in our character. The person who desires to live entirely away from all his fellows, however good his motive, has in him something that is unnatural, unhealthy, and insane. All the facts of human life depend upon this fact that we are social, not merely that we enjoy each other's company, but that, as the Bible says, "no man liveth to himself."

But though this is true, the fact remains that each of us is still himself or herself, and no one else, and that our interests are often different from those of other people, and so offence must come in the world. If our offences, small and great, against each other were never forgiven, it might be possible, perhaps, to have some rude and simple kind of society—stein and cruel, but it would certainly be impossible for mankind to rise above that humble level.

The next Questions are on page 5165.

had anyone performed this great association of ideas, to use the old name. This instance we have chosen is a great one, but we perform little associations of ideas every day, whenever we think at all. A great instance has purposely been chosen, because what we are trying to understand is the building up of the mind, and such a case as this helps us to realise the orderly stages of the mind's wonderful ascent from the mere sensation of seeing up to one of the greatest ideas in the world. Let us just observe for ourselves how the stages follow upon one another.

### HOW A CHILD'S MIND IS GRADUALLY BUILT UP

John Locke said that there is nothing in the mind except what was first in the senses, and that everything which comes to be in the mind is built up out of sensations and reflections upon them. Now, this is true, even in such a tremendous idea in astronomy as that the stars are suns. This begins with mere sensation. The mind begins its existence in babyhood and childhood without any inborn ideas of any kind. Its first experiences are mere sensations. The eye, as we know, is made from a part of the brain which has come forward outside the skull—"The brain comes out to see," as has been said. The eyes are turned upwards, and certain impressions of light are gained. These are mere sensations.

If there were no such thing as memory, they might be repeated every night during a lifetime, and nothing would come of it. But living matter remembers. So, beginning with sensation and with the necessary help of memory, we pass to the stage of perception where the points of light seen one night are more than seen, for they are perceived to be the same as the points of light that have been seen on former nights.

### REAL THINKING IS PUTTING THINGS TOGETHER IN THE MIND

Percepts are remembered just as sensations are, and so we may go about with the percepts in our mind of the stars and the sun. Then one man singled out from the rest puts the two percepts together, and so makes a *concept* by this process of conception, or thought, and says the stars are suns. This teaches us the slow and necessary order in which the mind is built and

grows, and the dependence of its highest deeds upon its humblest deeds. It is also a good instance of the truth that all thinking is association of ideas. The word *conceive* means "to take together", the word *associate* means "to make companions", and all thinking is putting things together—making companions of them, making a relation between them.

To some extent we all do this without effort or intention, but beyond a certain point we are very apt not to trouble about it. The point where we stop the process is the point at which our interest ends. Thinking is not a thing that happens to us, but a thing that we do, and in all doing a motive power has to come from somewhere. The motive power in this great doing of the mind, which we call thinking, is interest. Here we come to the key of one of the great differences between men, and, if the study of the association of ideas taught us nothing else, it would still be well worth while to study for this.

### THE SECRET OF SUCCESS IN ALL GREAT THINKERS

We are right to admire the "kings of thought," but we are very wrong in our notions of what makes them great. It is true that in certain departments there are very special powers which one brain has and another has not, this is true of mathematics, for instance, and of music. But, apart from that, there is nothing more certain than that most of the great thoughts, and most of the great discoveries of mankind, might have been thought or made by anyone if they had been interested enough.

The secret of most of the great deeds done by the minds of men, in the way of pure thought or association of ideas, has been the great difference, not in the way in which the great minds associate, but in the fact of interest and patience leading them to go on thinking and thinking, endlessly revolving the ideas in their minds, and at last finding out the truth.

For, of course, associations of ideas may be false or true, or they may be merely fanciful, not pretending to be true, as when we say the moon is made of green cheese. But the greatest business of the human mind in its power of association is the discovery of truth, and we ought to have a right notion in our heads of what we mean by truth.



in which the false kinds of interest lead men astray. In the last case men deliberately deceive other people, but in this case they unconsciously deceive themselves. This is because the whole process of association can be upset and changed by feeling. Long ago this was quite forgotten by men of science.

#### THE WAY IN WHICH OUR FEELING AFFECTS OUR THINKING

There was a time when men thought that the intelligence, or intellect—the part which knows and thinks—was practically the whole of the mind. They took no notice of feeling and they thought that our deeds proceeded only from the results of what we thought. It is very strange how men could have thought this, for everyone knows how largely our feelings determine our deeds.

But to-day we do not make the mistake of supposing that the intellect is the whole of the mind, and so we are prepared to understand how much the intellect is affected by other parts of the mind. Thinking, or association, is a kind of doing, and we have just said that doing is largely determined by feeling. When we feel angry we are apt to kick, or hit, and so on.

Now, what is true of other more obvious kinds of doing is also true of that very wonderful, though less obvious, kind of doing which is called thinking. What we feel often decides what we think. We want to win, for money or for glory or for spite, we are fighting another country, and we want to prove that we are right, or we are fighting for our class or our church against people who dress rather differently, or who arrange the service rather differently in their places of worship. We fancy that we are seeking the truth, but we are not seeking the truth, and just for that reason we do not find it. We are driven by some interest which is not interest in truth, and that decides where we get to.

#### THE WRONGFULNESS OF BELIEVING ONLY WHAT WE WANT TO BELIEVE

This upsetting of the judgment by feeling, so that, as happens every day all over the world, men come to believe what they want to believe, is one of the most important facts in the life of mankind, and accounts for half the facts of human history. If we are at all sensible and watchful, we can soon notice for ourselves what

happens, because it is apt to happen to every one of us, and we need not wait long for a chance of observing it. What we shall find is probably this—that somehow or other all the facts and ideas and memories which suit what we want to believe, or to prove or persuade other people of, stand out strongly in the foreground of our minds. We know that the secret of attention is interest, and these things which we want to believe interest us most, and so we attend to them most.

Unfortunately, we attend to them so much that we do not attend to the other facts and ideas which do not suit our case. But we cannot form associations unless we attend, and so the associations which we do form, and the arguments which we use, are all based upon the things we have attended to, the things that interested us most, the things that suited our case. That is the reason why we often go wrong.

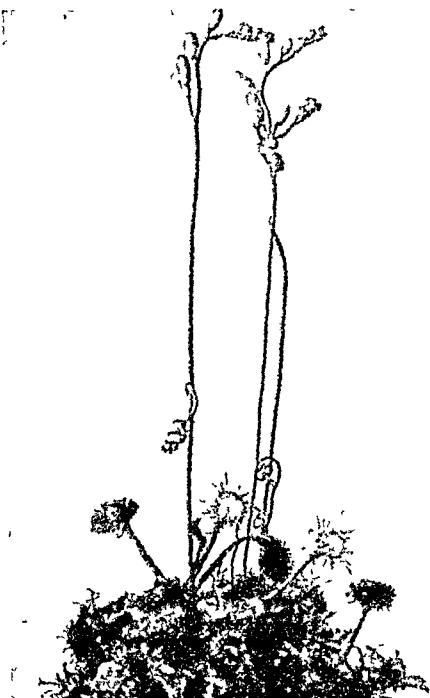
#### THE REASONS WHY MEN DO NOT ALWAYS SEARCH FOR TRUTH

We may be arguing with someone else who is interested to prove the opposite. Just as the points which favour us press up into our minds, so the points which favour his case press up into his. But really we do not listen to his arguments, and he does not listen to ours, and neither of us convinces the other.

This is the sort of thing that happens in politics, and most of the things men quarrel about. There is a certain amount of deliberate deception, but the great key to the differences of opinion which divide even intelligent men is self-deception, depending upon the way in which our processes of association are spoilt by our feelings and our interests.

This danger comes into everything, even into the discovery of truth. There are many reasons why it enters there also. It is not the discovery of truth, but trying to persuade people that we have discovered truth, that often leads to money or glory. Quite apart from that, when a man has said a thing, he likes to prove himself right, and that, of course, is not quite the same as liking to find the truth.

Then there are motives like jealousy, or motives like trying to prove that something which is believed by our church or our class or the particular school to which we belong is right. All



**THE ROUND-LEAVED SUNDEW**

We see how this insect-eating plant is attracted to flesh by the pictures on page 3511. Wonderful powers used to be attributed to this plant. A fragment put into a glass of poison was supposed to smash the glass.



**THE COMMON BUTTERWORT**

This is another of our insect-eating plants. The leaves, with their frosted appearance, and the violet flowers give the plant a striking appearance. Insects are caught on the leaves, which close round them.



**THE BOG PIMPERNEL**

The pretty little bog pimpernel, with its creeping stems, pale oval leaves, and delicate rosy-pink flowers, is common all over the country. Except for colour, the flower is much like the scarlet pimpernel.



**THE BUCK BEAN**

The buck bean, which is also called the bog bean and the marsh trefol, is one of the handsomest flowers of the bog-land. Its flowers are white, tipped with pink, and as many as twelve sometimes grow on one flower-spike.

crimson glands, with a knob at the tip of each. From this knob there is poured out a clear, sticky fluid, which can be drawn out into long threads, as though it were a very good sort of liquid gum.

This gum, as we may call it, glitters in the sunshine and, in combination with the red colour of the leaves, makes these appear more like flowers sprinkled with dewdrops. They also look not unlike small anemones, though it is not likely that they present such an appearance to the insects that visit them; but their action is much like that of an anemone.

Now, the sundew is so clever that it can tell the difference between things that will serve it as food and things that will not. If upon a fully open leaf we drop a particle of stone or glass, nothing will happen, which shows that the leaf has got some sense of taste or smell. But if we were to drop upon it the smallest fragment of meat, or even a snippet of hair, it will know that the substance is *animal*, and will bend its tentacles towards it, and envelop it.

#### The Bog Pimpernel

On the edges of the bog, in July or August, we shall find one of the most beautiful of our wild flowers, though it is only a small one. This is the bog pimpernel, a near relation of the common scarlet pimpernel of the fields. The bog pimpernel is a much smaller and more delicate-looking plant, with short, trailing stems, a few egg-shaped leaves in pairs, but larger, funnel-shaped flowers of a clear rosy tint. It grows in masses on the bog moss.

#### The Buck Bean, or Bog Bean

One of the most lovely of these little-known bog flowers is the buck bean, or bog bean. We shall know it at once if we remember its name, because its large leaves are broken up into three leaflets, and look like the leaves of the broad bean. These leaves come from a thick, creeping root-stock, from the middle of which rises a stout flower-stem bearing white or pink funnel-shaped flowers, the lobes of the corolla covered with fleshy fringes, and the stamens red. These should be sought in May or June.

#### The Marsh Marigold

If our visit to the bog is in spring, we shall find parts of it turned to gold by the rich yellow flowers of the marsh

marigold. This is one of the buttercup family, as we shall soon see by the flowers. They are just huge buttercups, two inches across. There is a thick, creeping root-stock, that roots as it goes, and sends up thick stems and large, glossy, kidney-shaped leaves, that increase in size after flowering.

The flower has no petals, but the sepals are coloured and enlarged, and serve as well as petals. There are many golden stamens, and nectar is poured out abundantly at the base of the pistils, and attracts beetles, flies, and bees. Another name for the marsh marigold, given to it in many districts, is the kingcup.

#### The Marsh Violet

About the same time we may find the marsh violet in flower. Its leaves are broader than those of the sweet and dog violets, more kidney-shaped than heart-shaped, and the lilac-coloured flowers stand high above the leaves on very erect stalks. They are not scented, and are sometimes white. The arrangements of the flower are much the same as in the case of the other violets.

#### The Yellow Flag

But a more imposing and later spring flower is the yellow flag, with its stiff, long, sword-shaped leaves, that stand erect and overlap at the bottom. In May it is a fine sight, for then it has sent up its tall flower-stalk with bright yellow flowers that are about three or four inches across.

These flowers are not very easily described. What look like three petals bending down are really three sepals, the three narrow petals bend inwards and will be found between the sepals. What has the appearance of an upper petal arching outward is really one of the stigmas, of which there are three, and situated below the arch we shall find a yellow stamen. The seed-vessel is a large three-sided capsule.

#### The Golden Saxifrage

Another spring bog plant is the golden saxifrage, which is of quite lowly growth. It has short stems, which branch and root, covered with thick, nearly round leaves. The flowers at first sight appear to be large, but when we come to look at them closely we find they are very minute, but the upper leaves by which they are surrounded are yellow instead of green, and it is

these that are mistaken for the flowers. The real flower consists of a tiny four-lobed calyx, which holds no petals, only the eight stamens and the pistil with two styles. In some of the flowers there are stamens only, and no pistil.

#### The St John's-worts

Nearly all the bright St John's-worts we meet with in the woods and on the downs have very erect, stiff stems, but the marsh St. John's-wort has many soft, creeping stems, and nearly round leaves that partly clasp the stem. The whole plant is thickly clothed with soft, whitish hairs. The flowers are half an inch across, of a pale yellow colour, and the sepals have red teeth along their edges. It flowers in summer.

#### The Bog Asphodel

Another yellow bog flower is that of the bog asphodel, whose small, erect leaves are sword-shaped and grouped just like those of the flag. But the flowers are only like those of the flag in that they are of a bright golden-yellow hue.

They are really little lilies, about half an inch across, and, like all lilies, the sepals and petals are alike. They are green on the outside, and they do not fall off, but continue to wrap the red seed-vessel until it is ripe, but by that time, of course, they have become very much withered.

#### The False Cyperus

In some bogs we shall find a sedge that has very pretty tassel-like flower-spikes. It is called the false cyperus, because it slightly resembles a taller and rarer plant called the true cyperus, or galingale. Its leaves are grass-like, but hard, having sharp, cutting edges to them.

It grows to a height of three or four feet, and the pale green spikelets hang in clusters of about half a dozen, made up of stiff scales, beneath which are the tiny flowers. Some of the spikelets are short and have only stamens on them; some are long and bear pistils only.

#### The Marsh Gentian

At the edge of the bog there may be growing the marsh gentian. It has long, trailing stems clothed with short, slender leaves, but its flowers are large for the size of the plant, and stand erect on short stalks. The corolla is slender, bell-shaped, nearly two

inches long, of a brilliant blue inside, but of a dull blue outside, with fine broad green streaks down it. It flowers in the months of August and September.

#### The Grass of Parnassus

The grass of Parnassus is another beautiful bog flower, a member of the saxifrage family. Its leaves are oval, with pointed tip and heart-shaped base. They spring in a circle from the root-stock, and stand almost erect on long stalks.

The flower-stem is much longer than the leaves, and bears one flower at its summit. This is about an inch across, the five white petals being of rather thick substance and finely streaked with green. The large pistil is in the centre of the flower, and around it are five stamens.

It is thought that there should be ten of these, and that the other five have been changed into oval scales which bear honey-glands near the pistil. From their edges grow a fringe of white hairs with yellow knobs, which shine as though they were wet.

#### The Ivy-Leaved Bellflower

In many bogs in the south and west of Britain, and south and east of Ireland, we may find the ivy-leaved bellflower. It is a sort of first cousin to the harebell, but instead of its small flower being truly bell-shaped, it is twice as long as it is wide.

Its creeping stems are green threads, and its small leaves have five sharp-angled lobes something like the leaf of the ivy. The flowers are half an inch long, and of a pale blue colour, with five short lobes at the mouth of each.

#### The Bird's-Eye Primrose

In the bogs of the north of England there is a pretty little primrose called the bird's-eye primrose, or mealy primrose, because its leaves are covered on the undersides with a white or pale yellow powder.

The whole plant looks much more like the garden auricula than the common primrose of the woods, for its lilac or pale purple flowers are clustered, like those of the cowslip, at the top of a short stalk, a few inches above the unwrinkled leaves. It flowers in June and July, and gets its name of bird's-eye from a patch of yellow which is found around the mouth of the corolla-tube.

**The Marsh Cinquefoil**

A purple-flowered relation of the common silverweed and barren strawberry grows in bogs throughout the country, and is known as the marsh cinquefoil. It has a long, woody root, like the yellow-flowered cinquefoil of the meadow, and, like it also, has its leaves divided into five or seven leaflets.

But the marsh cinquefoil has its flowers of a very dark purple-brown colour—not only its petals, but the larger sepals. Some bracts below the sepals, and the tall flower-stems, are all of the same purple-brown colour, which makes the plant look very singular. It flowers in the months of June and July.

**The Marsh Pennywort**

On the bog moss we shall find a number of round, dark green leaves from half an inch to two inches across, but with no stalk visible. If we pull one up, we shall see the reason for this. The stalk is there, but fixed in the middle of the leaf underneath. The plant is called the marsh pennywort.

There is a slender stem which creeps through the moss, and, as it is hidden from the light, it is white. In the summer-time we may find its tiny cluster of pinkish-green flowers. It is one of the umbel-bearing family, but it does not look as though it were related in the least degree to the cow-parsnip.

**The Angelica**

Another umbel-bearer that we may find on the borders of the bog, as well as in damp places in woods, is the wild angelica, which we shall have no trouble at all in placing in its proper family.

It grows to a height of five or six feet, with a thick, jointed, pipe-like stem, often of a purple tint. Its large, wedge-shaped leaves are often a couple of feet in length, much divided, as are the leaves of most plants of this family. The umbels of white or purplish flowers are very large, and appear in July.

**The Cranberry**

In some parts of the country we shall find the cranberry, a relation of the bilberry and cowberry. The evergreen leaves and the flowers are very similar, but the stems creep, the flowers are red in colour, and the berries are dark red and extremely acid to the taste.

**The Orchids of the Bogslands**

There are several orchids that grow in bogs, but they are rare. One of these, the bog orchis, is a very small plant, growing only a few inches high, with several egg-shaped leaves and minute yellow-green flowers. Little bulbs are formed along the edges of the leaves, which drop off and grow into new plants. The summer lady's tresses is still more rare, for, besides the Channel Islands, its only British haunts are in Wyre Forest and the New Forest.

It is much like the autumn lady's tresses we find on the downs, but its flowers and leaves are larger, it flowers earlier, and is not fragrant. The marsh helleborine, a third species, is not nearly so rare as the others, and is much larger. It grows to a height of a foot or more, has lance-shaped leaves, and its flowers are half an inch across.

**The Cotton Grass**

There is a slender, rush-like plant that appears to have tufts of cotton-wool sticking on the ends of its stems. This is the cotton grass, but it would be more correct to call it cotton sedge, for it is one of the sedge family, and not a grass. Grasses have round stems, but if we look at these we shall find that they are three-sided, and if we do not handle the sedges carefully they will cut our hands. They have flat, slender leaves that come mostly from the root-stock. The flowers are gathered into a head, and at first bear a pretty close resemblance to those of the grasses.

**The Bog Myrtle**

The bog myrtle, a bushy shrub about three feet high, is one of the largest of all bog plants. Early in the year, before the leaves have appeared, we shall find the flowers in spikes, much like stiff catkins. They are brownish green in colour, with red stamens and pistils, but one spike will only produce stamens or pistils, and, as a rule, the stamen-bearing spikes will be on one bush, the pistil-bearing ones on another.

The fruits are in roundish heads, called candle-berries, because they are coated with wax, which is melted off by throwing them into hot water, and the wax is then used to make into candles. The leaves are lance-shaped, with their broadest ends away from the twigs. The next story of Plant Life is on page 5185.

## The Marsh Cinquefoil

A purple-flowered relation of the common silverweed and barren strawberry grows in bogs throughout the country, and is known as the marsh cinquefoil. It has a long, woody root, like the yellow-flowered cinquefoil of the meadow, and, like it also, has its leaves divided into five or seven leaflets.

But the marsh cinquefoil has its flowers of a very dark purple-brown colour—not only its petals, but the larger sepals. Some bracts below the sepals, and the tall flower-stems, are all of the same purple-brown colour, which makes the plant look very singular. It flowers in the months of June and July.

## The Marsh Pennywort

On the bog moss we shall find a number of round, dark green leaves from half an inch to two inches across, but with no stalk visible. If we pull one up, we shall see the reason for this. The stalk is there, but fixed in the middle of the leaf underneath. The plant is called the marsh pennywort.

There is a slender stem which creeps through the moss, and, as it is hidden from the light, it is white. In the summer-time we may find its tiny cluster of pinkish-green flowers. It is one of the umbel-bearing family, but it does not look as though it were related in the least degree to the cow-parsnip.

## The Angelica

Another umbel-bearer that we may find on the borders of the bog, as well as in damp places in woods, is the wild angelica, which we shall have no trouble at all in placing in its proper family.

It grows to a height of five or six feet, with a thick, jointed, pipe-like stem, often of a purple tint. Its large, wedge-shaped leaves are often a couple of feet in length, much divided, as are the leaves of most plants of this family. The umbels of white or purplish flowers are very large, and appear in July.

## The Cranberry

In some parts of the country we shall find the cranberry, a relation of the bilberry and cowberry. The evergreen leaves and the flowers are very similar, but the stems creep, the flowers are red in colour, and the berries are dark red and extremely acid to the taste.

## The Orchids of the Boglands

There are several orchids that grow in bogs, but they are rare. One of these, the bog orchis, is a very small plant, growing only a few inches high, with several egg-shaped leaves and minute yellow-green flowers. Little bulbs are formed along the edges of the leaves, which drop off and grow into new plants. The summer lady's tresses is still more rare, for, besides the Channel Islands, its only British haunts are in Wyre Forest and the New Forest.

It is much like the autumn lady's tresses we find on the downs, but its flowers and leaves are larger, it flowers earlier, and is not fragrant. The marsh helleborine, a third species, is not nearly so rare as the others, and is much larger. It grows to a height of a foot or more, has lance-shaped leaves, and its flowers are half an inch across.

## The Cotton Grass

There is a slender, rush-like plant that appears to have tufts of cotton-wool sticking on the ends of its stems. This is the cotton grass, but it would be more correct to call it cotton sedge, for it is one of the sedge family, and not a grass. Grasses have round stems, but if we look at these we shall find that they are three-sided, and if we do not handle the sedges carefully they will cut our hands. They have flat, slender leaves that come mostly from the root-stock. The flowers are gathered into a head, and at first bear a pretty close resemblance to those of the grasses.

## The Bog Myrtle

The bog myrtle, a bushy shrub about three feet high, is one of the largest of all bog plants. Early in the year, before the leaves have appeared, we shall find the flowers in spikes, much like stiff catkins. They are brownish green in colour, with red stamens and pistils, but one spike will only produce stamens or pistils, and, as a rule, the stamen-bearing spikes will be on one bush, the pistil-bearing ones on another.

The fruits are in roundish heads, called candle-berries, because they are covered with wax, which is melted off by throwing them into hot water, and the wax is then used to make into candles. The leaves are lance-shaped, with their broadest ends away from the twigs. The next story of Plant Life is on page 5185.

light is now known to be true, there was another theory which supposed that light consisted of a number of tiny specks of something flying through space.

We know for certain that light moves, and yet this is a thing which we may very naturally forget. Let us suppose that we are out in the open air on a bright day, or that we are in a room lit by a steady light, or take the simple case before us at the present moment and the place as we are reading this page. It seems to us that there is something which we call light illuminating this page, and which simply stays where it is. But this is not at all what really happens.

#### THE LIGHT THAT FLASHES ACROSS A MILLION MILES IN SIX SECONDS

All light everywhere is in movement, the most rapid movement in the universe. The light is pouring down from the sky, in at the window, or from the lamp, and up from the page to our eyes, as certainly as if it consisted of raindrops, but with vastly greater speed.

The first fact to learn is that there is something moving which makes light. This movement has been studied in various ways, and the rate of it has been found out. It is the same as the rate at which radiant heat, and also electric waves, move, for light is a kind of electric wave. This rate is about 186,000 miles in every second, or a million miles in less than six seconds. So far as we have been able to find out, this rate never changes, it is true for all kinds of light, and it is the highest speed that can exist in the universe.

Now, there are many kinds of movement, as we know, and this movement of light might be a movement of something that travelled from place to place, or it might be a wave movement which we could compare to the waves of water. When we throw a stone in a pond, the ripples run along the surface of the water, but it is not, of course, the surface of the water itself that runs.

#### A SERIOUS MISTAKE THAT SIR ISAAC NEWTON MADE ABOUT LIGHT

The greatest of all the students of light, since time began, was Sir Isaac Newton, the discoverer of the law of gravitation and of the laws of motion. But though this is true, and though if it had not been for Newton we could not know what we now do, it is an interesting fact in the history of knowledge that

Newton was wrong, and the mistake he made was most unfortunate. So far as he could judge, light did not consist of waves, but of tiny particles of something or other shooting through the air. In the study of such matters as these, there never was a mind quite so great, perhaps, as Newton's, and it is worth knowing that even the greatest of men may make mistakes, and when great men make mistakes, then the consequences are very serious. Newton had found out more about light than all who had gone before him, and this naturally lent his opinions great authority.

If light consisted, as Newton supposed, of a sort of rain or hail of tiny bullets flying through space in all directions at tremendous speeds, these little flying balls would push and press against anything they struck. Now, the latest of the great discoveries made about light is that it has a pressure. That is not to say, however, that it does consist of a rain of bullets after all, but that, though it consists of waves, and though no material thing is moving when light flies, yet these waves have a pressure.

#### A FAMOUS MAN WHO COULD STUDY THINGS THAT WERE NOT YET DISCOVERED

How interested Newton would have been to have learnt this! This pressure is true not only of light in the strict sense of the word—that is to say, the waves that we can see—but it is true of the other waves, rays or radiations that we cannot see, and the proper name for it is *radiation pressure*.

A famous Scotsman, named Clerk-Maxwell, declared, many years ago, that light must have a pressure, and stated how much that pressure must be. This he did by means of sheer thinking-power, and because he had a true understanding of the nature of light waves. Within the present century students have independently proved that light has a pressure, and the force of it is just what Clerk-Maxwell foretold.

When very careful and delicate experiments are made, and something that weighs very light is delicately hung by a slender thread made of quartz, so that the tiniest touch will push it, we find that it is pushed when a ray of light is allowed to hit it, and the force of the push can be measured, and proves to be exactly what it ought to be to agree with our theory of light.

This simple experiment of Newton's has led to such a vast number of consequences that it would take a book to describe the merest outlines of them. In various parts of the world there are great observatories which are devoted to nothing else but repeating Newton's experiment with sunlight.

#### THE GREAT MARVEL OF A LITTLE BAND OF COLOUR

We already know that the band of colour obtained is called a spectrum, and everything seen in this spectrum has to be studied and noted and described and measured, we have to analyse the spectrum as we would analyse a mixture of chemicals in a glass vessel. This subject is known as *spectrum analysis*.

Spectrum analysis has to be applied not only to sunlight, but to the light from the moon and Mars, and the other planets, it has to be applied to the light from the stars and comets and nebulae. We have to study the light given out by hot metals and minerals, and by every kind of lamp, or anything else that gives out light at all. In various ways we can study even the invisible part of the spectrum, the rays beyond the violet and below the red. With those beyond the violet we can take photographs, and we find that those below the red convey heat. We read about the spectrum on pages 2716 to 2719.

In every part of the spectrum we find certain dark lines. Newton missed them, but they are almost more important and interesting than the spectrum itself. Every one of these lines tells us something about the material that the light is coming from. It follows by Newton's experiment that we can tell what kinds of atoms are giving forth light in the sun.

#### HOW A PIECE OF GLASS CAN TELL US WHAT THE STARS ARE MADE OF

An analysis of the spectrum obtained by means of the prism teaches us of what elements the sun and the stars and other heavenly bodies are composed. It proves to us that there are oxygen and water in the air of Mars, it helps us to tell one element from another, to discover in one element the presence of smaller quantities of another element that we can detect by no other means, it even enables us to tell whether stars are moving towards us

or from us in the very line of our sight, and at what rate they are doing so. It was not really until the nineteenth century that the wave theory of light was established; and as we read all about sound in this book, it is worth knowing that it is the resemblance between sound and light which led the great Englishman, Dr Thomas Young, to ask whether, notwithstanding Newton, light must not also consist of waves, as sound does. Young made the remarkable discovery that, under certain conditions, light added to light will produce darkness, because the waves of the one interfere with the waves of the other, as may happen with sound waves, and as we see when water waves are reflected from a breakwater. It was impossible to have any theory of light except that it is made of waves once this fact of interference was known.

Now, here we have not only a proof of the wave theory, but also a very interesting explanation of a certain difference between light and sound.

#### WHY A RAY OF LIGHT WILL NOT SPREAD OUT AND FILL A ROOM

If we let in a beam of light through a hole, it certainly spreads out as it travels, but it does not at all behave as sound would. Sound would spread out equally in all directions, just as the light does from a candle standing in the middle of a room. But why does a ray of light remain narrow and not spread out sideways, so that the ray of light does not fill a whole room as sound coming through a hole would?

The answer is that the waves going sideways from a ray of light almost entirely interfere with each other. As we have seen, this interference cannot be explained unless light does indeed consist of waves. This discovery was made by a Frenchman, and Clerk-Maxwell, whose name we have already mentioned, continued the study of light in this country, which has so much to boast of in this connection, and proved for ever that light consists of electric waves passing through the ether.

Now we must study a little the nature of these waves. In the first place, we must remember that, totally unlike the waves of sound, but exactly like the waves of wireless telegraphy, these waves travel in, and are made by, the ether. Ordinary matter, such as air or



from it hundreds of years ago when the light which has now reached us left the star. The star may long ago have been smashed into dust and disappeared. We cannot say of any star we see in the sky at this moment that it is now there, we can only say of the nearest we know that about four and a half years ago it was certainly there.

#### EVERY KIND OF SUBSTANCE GIVES OUT ITS SPECIAL KIND OF LIGHT

It is a tremendous fact that every kind of atom known to chemists should be so specially different from all other kinds of atoms that it gives off light of a special kind. It is very interesting, also, to study the different kinds of light given out by different atoms when they are made luminous. These different kinds of light are called the *spectra* of the various atoms or elements. Thus there is a spectrum of iron, a spectrum of oxygen, and so on.

We also have to study how these spectra change according to the hotness of the atoms that produce the light, and all this study is specially important, not only because it teaches us the chemistry of so many things, including the stars, but also because it is one of the great tests for an element.

If something that we know nothing about looks like an element, we must always find out whether it has a spectrum of its own different from any other. If it gives off light different from any other light known to us, then it must be made of atoms different from any others that we know—that is to say, it must truly be a new element. But often we find that the thing really gives off a light which tells us that it is only a mixture of two other kinds of elements that we were aware of already.

#### THE MARVELLOUS ENERGY ALWAYS GOING ON IN THE AIR TO MAKE LIGHT

The next great fact we must remember is that it is impossible to get something from nothing. Light is not a "thing" in the sense that it can be handled or chopped up, but it is, nevertheless, a great reality, it is a form of power, or energy, constantly being hurled through the air from the atoms of matter that are luminous. These atoms we must imagine to be vibrating at tremendous rates, and just as this vibration produces the kind of radiations we call heat, so also it produces

the similar kind of radiations we call light. But all the while the atoms are doing this they are spending power, and if anyone spends without replenishing that which is spent, in time he or she will become bankrupt.

Once we grasp the fact that the making of light is spending, we realise how it is that if we are to get the kind of power called light from anything, we must put some kind of power into it. We run electrical power into a wire, and so we get light; we take the chemical power of carbon and oxygen in a candle, and so we get light; we can burn oxygen and hydrogen and produce a great deal of heat which makes a piece of lime very hot, and so we get limelight.

But in no case do we get power unless we give it. Every luminous atom in the universe is cooling down, and in exact proportion as it is giving heat and light it is losing energy, and will in the long run become cold and dark unless it gets new energy from somewhere. This is true even of radium, which makes radiant heat and certain kinds of light also, from inside itself. Its atoms must break down to do this, and must turn into simpler kinds of atoms which contain less energy, or power.

#### WHY THE EARTH MUST DIE IF THE SUN'S LIGHT GOES OUT

The importance of this is not merely that we have to pay for our light every quarter—as light cannot be made for nothing—but that the great luminous bodies in the sky are subject to the same laws as the head of a glowing match, which soon dies out and turns cold. This more especially concerns us as regards our own sun. It is from the sun that we on the earth get heat and light. His rays striking our world mean health and life and gladness for humanity. But the sun is cooling down, and when the sun grows cold all life upon the earth must die, as must all life present or to come upon any of the sun's planets. The making of light is the spending of power, the sun is spending power, and if that power is not replenished, it must therefore be cooling.

The sun, therefore, must one day become cold and dark, as countless other stars in the sky are, and as all the bright ones must become at some time.

The next part of this is on page 5173

WITH BIG TIN TRUMPET AND LITTLE RED DRUM. MARCHING LIKE SOLDIERS THE CHILDREN COME



Sound, sound the clarion, fill the fife!  
To all the sensual world proclaim



One crowded hour of glorious life  
Is worth an age without a foe

And the back crossbar as strong as the fore,  
And spring and axle and hub *encore*,  
And yet, as a whole, it is past a doubt,  
In another hour it will be *run out*!

First of November—"Fifty-five!"  
This morning the parson takes a drive  
Now, small boys, get out of the way!  
Here comes the wonderful one-hoss shay,  
Drawn by a rat-tailed, we-necked bay  
"Huddup!" said the parson. Off went they

The parson was working his Sunday's text,  
Had got to *fifteenth*, and stopped perplexed  
At what the—Moses—was conung next  
All at once the horse stood still,  
Close by the meet'n'-house on the hill.  
First a shiver, and then a thrill,  
Then something decidedly like a spill,  
And the parson was sitting upon a rock,  
At half-past nine by the meet'n'-house clock,  
Just the hour of the earthquake shock!

What do you think the parson found,  
When he got up and stared around?  
The poor old chaise in a heap or mound,  
As if it had been to the mill and ground!  
You see, of course, if you're not a dunce,  
How it went to pieces all at once—  
All at once, and nothing first,  
Just as bubbles do when they burst  
End of the wonderful one-hoss shay!  
Logic is logic—that's all I say

### BEDOUIN SONG

The intensity of the Arabs' devotion may be a matter of fact, though we may have some reasonable doubt on the subject. But the flowery manner in which the Arab, in common with all Orientals, expresses his feelings has been well suggested by Bayard Taylor in this very popular song.

FROM the desert I come to thee  
On a stallion shod with fire,  
And the winds are left behind  
In the speed of my desire  
Under thy window I stand,  
And the midnight hears my cry—  
I love thee, I love but thee,  
With a love that shall not die  
Till the sun grows cold,  
And the stars are old,  
And the leaves of the Judgment  
Book unfold!

Look from thy window, and see  
My passion and my pain,  
I lie on the sands below,  
And I faint in thy disdain  
Let the night-winds touch thy brow  
With the heat of my burning sigh,  
And melt thee to hear the vow  
Of a love that shall not die  
Till the sun grows cold,  
And the stars are old,  
And the leaves of the Judgment  
Book unfold!

My steps are nightly driven,  
By the fever in my breast,  
To hear from thy lattice breathed  
The word that shall give me rest.  
Open the door of thy heart,  
And open thy chamber door,  
And my kisses shall teach thy lips  
The love that shall fade no more  
Till the sun grows cold,  
And the stars are old,  
And the leaves of the Judgment  
Book unfold!

### BREAK! BREAK! BREAK!

Few of the shorter poems of Lord Tennyson are more quoted than these very beautiful lines of his, in which he suggests so perfectly that undertone of melancholy which seems to tune our thoughts when we stand by the seashore on a grey day and listen to the solemn music of the waves.

BREAK, break, break,  
On thy cold, grey stones, O Sea!  
And I would that my tongue could utter  
The thoughts that arise in me  
Oh, well for the fisherman's boy,  
That he shouts with his sister at play!  
Oh, well for the sailor lad,  
That he sings in his boat on the bay!  
And the stately ships go on  
To the haven under the hill,  
But oh, for the touch of a vanished hand,  
And the sound of a voice that is still!  
Break, break, break,  
At the foot of thy crags, O Sea!  
But the tender grace of a day that is dead  
Will never come back to me.

### OVER THE HILL

Some charming poems by that writer of true genius, George MacDonald, appear in other parts of our book, and the following, by him is very characteristic of his delicate fancy and tender feeling. How beautifully he suggests to the child mind the wonder of this world and the glory of a world that is to be! A longer and considerably altered version of this poem has also been published under the title of "I tell Me."

"TRAVELLER, what lies over the hill?  
Traveller, tell to me  
I am only a child—from the window-sill  
Over I cannot see"  
"Child, there's a valley over there,  
Pretty and wooded and shy;  
And a little brook that says, 'Take care,  
Or I'll drown you by-and-by!'"  
"And what comes next?"—"A little town,  
And a towering hill again,  
More hills and valleys, up and down,  
And a river now and then."  
"And what comes next?"—"A lonely moor  
Without a beaten way,  
And grey clouds sailing slow before  
A wind that will not stay."  
"And then?"—"Dark rocks and yellow  
sand,  
And a moaning sea beside"  
"And then?"—"More sea, more sea, more  
land,  
And rivers deep and wide"  
"And then?"—"Oh, rock and mountain and  
vale,  
Rivers and fields and men,  
Over and over—a weary tale—  
And round to your home again"  
"And is that all? Have you told the best?"  
"No, neither the best nor the end  
On summer eves, away in the west  
You will see a stair ascend  
"Built of all colours of lovely stones—  
A stair up into the sky,  
Where no one is weary, and no one moans,  
Or wants to be laid by"  
"I will go" "But the steps are very steep,  
If you would climb up there,  
You must lie at the foot, as still as sleep,  
A very step of the stair."

Never button ruddily torn  
From its fellows all unworn,  
Knickerbockers always new—  
Ribbon tie and collar, too,  
Little watches, worn like men,  
Only always half-past ten—  
Just precisely right, you know,  
For the land of Thus-and-So!

"And the little babies there  
Give no one the slightest care—  
Nurse has not a thing to do  
But be happy and say 'Boo!'  
While mamma just nods, and knows  
Nothing but to doze and doze,  
Never litter round the grate,  
Never lunch or dinner late,  
Never any household din,  
Peals without or rings within—  
Baby coos nor laughing calls,  
On the stairs or through the halls—  
Just great Hushes to and fro  
Pace the land of Thus-and-So!

"Oh, the land of Thus-and-So  
Isn't it delightful, though?"  
"Yes," hisped Willie, answering me  
Somewhat slow and doubtfully—  
"Must be awful nice, but I  
Rather wait till by-and-by  
'Fore I go there—may be when  
I be dead I'll go there then—  
But——" the troubled little face  
Closer pressed in my embrace—  
"Let's don't never ever go  
To the land of Thus-and-So!"

### CORONATION

This poem by Helen H. Jackson is a good example of the poetic apologue, or "story with a moral." The purpose of the poet is to illustrate the ancient truth that an earthly crown may only be the symbol of a slave, while true freedom, both of mind and person, may be clothed with the poorest raiment.

At the king's gate the subtle noon  
Wove filmy yellow nets of sun,  
Into the drowsy snare too soon  
The guards fell one by one  
Through the king's gate, unquestioned then,  
A beggar went, and laughed, "This brings  
Me chance, at last, to see if men  
Fare better, being kings!"  
The king sat bowed beneath his crown,  
Propping his face with listless hand,  
Watching the hour-glass sifting down  
Too slow its shining sand  
"Poor man, what wouldst thou have of me?"  
The beggar turned, and, pitying,  
Replied, like one in dream, "Of thee,  
Nothing I want the king!"  
Up rose the king, and from his head  
Shook off the crown and threw it by.  
"O man, thou must have known," he said,  
"A greater king than I!"  
Through all the gates, unquestioned then,  
Went king and beggar hand in hand,  
Whispered the king, "Shall I know when  
Before his throne I stand?"  
The beggar laughed. Free winds in haste  
Were wiping from the king's hot brow  
The crimson lines the crown had traced  
"This is his presence now!"  
At the king's gate the crafty noon  
Unwove its yellow nets of sun,  
Out of their sleep in terror soon  
The guards waked one by one.

"Ho, here! Ho, here! Has no man seen  
The king?" The cry ran to and fro,  
Beggar and king, they laughed, I ween,  
The laugh that free men know

On the king's gate the moss grew grey,  
The king came not. They called him dead,  
And made his eldest son one day  
Slave in his father's stead

### OLD CHRISTMAS

Mrs. Mary Howitt has captured in these jolly verses some thing of the spirit of old fashioned Christmas—the time of good cheer, good-fellowship, and general kindness. "Old Christmas," we see, is not too old to take a vigorous part in merry making; he is just as old or as young as we wish him to be, and, if our hearts are light and warm with kindness, we shall find him as young and as genial as any of us

Now, he who knows old Christmas,  
He knows a carle of worth,  
For he is as good a fellow  
As any upon the earth.  
He comes warm-cloaked and coated,  
And buttoned up to the chin,  
And soon as he comes a-nigh the door  
We open and let him in  
We know he will not fail us,  
So we sweep the hearth up clean,  
We set for him the old armchair,  
And a cushion whereon to lean  
And with sprigs of holly and ivy  
We make the house look gay,  
Just out of old regard to him,  
For 'twas his ancient way  
He comes with a cordial voice  
That does one good to hear,  
He shakes one heartily by the hand,  
As he hath done many a year  
And after the little children  
He asks in a cheerful tone,  
Jack, Kate, and little Annie;  
He remembers them every one!  
What a fine old fellow he is!  
With his faculties all as clear,  
And his heart as warm and light,  
As a man in his fortieth year!  
What a fine old fellow, in troth!  
Not one of your griping elves,  
Who, with plenty of money to spare,  
Think only about themselves  
Not he! for he loveth the children,  
And holiday begs for all,  
And comes with his pockets full of gifts  
For the great ones and the small  
And he tells us witty old stories,  
And singeth with might and main,  
And we talk of the old man's visit  
Till the day that he comes again  
And all the workhouse children  
He sets them in a row,  
And giveth them rare plum-pudding,  
And twopence apiece also  
He must be a rich old fellow—  
What money he gives away!  
There's not a lord in England  
Could equal him any day!  
Good luck unto old Christmas,  
And long life, let us sing,  
For he doth more good unto the poor  
Than many a crowned king!

AN INCIDENT IN A RAILROAD CAR

The friendships of poets, and poets' praise of other poets, have produced many charming and tender verses that are among the treasures of our poetry. For there is nothing so humbly attractive as the honest admiration of one man of genius for another. One of the best things which Bret Harte wrote was his famous poem "Dickens in Camp," in which he praises the magic power of the great story teller. But all great poets and authors from Homer to Robert Louis Stevenson have inspired other poets to sing of them. "To Shakespeare" and Burns how many poems have been inspired! This poem by James Russell Lowell, the famous American poet, is one of the finest tributes ever paid to the genius of Scotland's greatest poet, Robert Burns.

He spoke of Burns men rude and rough  
Pressed round to hear the praise of one  
Whose breast was made of manly, simple stuff,  
As homespun as their own

And, when he read, they forward leaned,  
And heard, with eager hearts and ears,  
His birdlike songs whom glory never weaned  
From humble smiles and tears

Slowly there grew a tender awe,  
Sunlike o'er faces brown and hard,  
As if in him who read they felt and saw  
Some presence of the bird

It was a sight for sin and wrong  
And slavish tyranny to see,  
A sight to make our faith more pure and  
strong  
In high Humanity

I thought, these men will carry hence  
Promptings their former life above,  
And something of a finer reverence  
For beauty, truth, and love

God scatters love on every side,  
Freely among his children all,  
And always hearts are lying open wide,  
Wherein some grains may fall

There is no wind but soweth seeds  
Of a more true and open life,  
Which burst, unlooked for, into high-souled  
deeds  
With wayside beauty rife

We find within these souls of ours  
Some wild germs of a higher birth,  
Which in the poet's tropic heart bears flowers  
Whose fragrance fills the earth

Within the hearts of all men lie  
These promises of wider bliss,  
Which blossom into hopes that cannot die,  
In sunny hours like this

All that hath been majestic  
In life or death, since time began,  
Is native in the simple heart of all,  
The angel heart of man

And thus, among the untaught poor  
Great deeds and feelings find a home,  
Which casts in shadow all the golden lore  
Of classic Greece or Rome

O mighty brother-soul of man,  
Where'er thou art, in low or high,  
Thy skye arches with exulting span  
O'er-roof infinity!

All thoughts that mould the age begin  
Deep down within the primitive soul,  
And from the many slowly upward wing  
To one who grasps the whole

In his broad breast, the feeling deep  
That struggled on the many's tongue  
Swells to a tide of thought whose surges leap  
O'er the weak thrones of wrong,

Never did poetry appear  
So full of Heaven to me as when  
I saw how it would pierce through pride and  
To lives of coarsest men. [fear,

It may be glorious to write  
Thoughts that shall glad the two or three  
High souls like those far stars that come in  
sight

Once in a century  
But better far it is to speak  
One simple word which now and then  
Shall waken their free nature in the weak  
And friendless sons of men,

To write some earnest verse or line  
Which, seeking not the praise of art,  
Shall make a clearer faith and manhood shine  
In the untutored heart

"FIDDLE-DEE-DEE!"

The unfading charm of Eugene Field's poems about little folk has been one of the features of our book of POETRY. If we were to ask for a show of hands from all the boys and girls who have delighted in his quaint humour and tuneful rhymes, it would be a case of "all hands up." In these verses he is laughing, in his sly way, at the "little soldier of four," and we are happy to think that the bird on the tree is also laughing at the vibrant marksman!

THE RE once was a bird that lived up in a tree,  
And all he could whistle was "Fiddle-dee-dee!"—

A very provoking, unmusical song  
For one to be whistling the summer day long!  
Yet always contented and busy was he  
With that vocal recurrence of "Fiddle-dee-dee!"

Hard by lived a brave little soldier of four  
That weird iteration annoyed him so sore,  
"I prithee, Dear-Mother-Mine! fetch me my  
gun,

For, by our St Diddy! the deed must be done  
That shall presently rid all creation and me  
Of that ominous bird and his 'Fiddle-dee-dee!'"

Then out came Dear-Mother-Mine, bringing  
her son

His awfully truculent little red gun,  
The stock was of pine and the barrel of tin,  
The "Bang" it came out where the bullet  
went in—

The right kind of weapon, I think you'll agree,  
For slaying all fowl that go "Fiddle-dee-dee!"

The brave little soldier quoth never a word,  
But he up and he drew a straight bead on  
that bird,

And while that vain creature provokingly sang,  
The gun it went off with a terrible bang!

Then loud laughed the youth, "By my  
Bottle!" cried he,

"I've put a quietus on 'Fiddle-dee-dee!'"

Out came then Dear-Mother-Mine, saying  
"My son,

Right well have you wrought with your little  
red gun!  
Hereafter no evil at all need I fear,  
With such a brave soldier as You-My-I owe  
here!"

She kissed the dear boy. The bird in the tree  
Continued to whistle his "Fiddle-dee-dee!"

# LITTLE VERSES FOR VERY LITTLE PEOPLE

THE RAINBOW is a rainbow in the sky,  
On the arch where the tempests trod,  
God wrote it ere the world was dry,  
'Tis the autograph of God.



TWO merry men  
One summer day,  
Forsook their toys,  
And forgot their play

TWO little faces  
Full of fun,  
Two little hearts  
That beat as one

FOUR little hands  
At work with a will;  
FOUR little legs  
That can't keep still

For labour is sweet,  
And toil is fun,  
When mother wants  
Any work to be done.



ROSE dreamed she was a lily,  
Lily dreamed she was a rose,  
Robin dreamed he was a sparrow;  
What the owl dreamed no one knows  
But they all woke up together  
As happy as could be  
Said each one: "You're lovely, neigh-  
bour,  
But I'm very glad I'm me"

JENNY WREN fell sick  
Upon a merry time;  
In came Robin Redbreast,  
And brought her sops and wine.

"Eat well of the sop, Jenny,  
Drink well of the wine"  
"Thank you, Robin, kindly,  
You shall be mine"

Jenny, she got well,  
And stood upon her feet,  
And told Robin plainly,  
She lov'd him not a bit.

Robin, being angry,  
Hopped upon a twig,  
Saying, "Out upon you, Jenny!  
Fit upon you, bold-faced jig!"

I KNOW a funny little man,  
As quiet as a mouse,  
Who does the mischief that is done,  
In everybody's house  
There's no one ever sees his face,  
And yet we all agree,  
That every plate we break was cracked  
By Mr Nobody

'Tis he who always tears our books,  
Who leaves the door ajar,  
He pulls the buttons from our shirts,  
And scatters pins afar  
That squeaking door will always squeak,  
For, prithee, don't you see,  
We leave the oiling to be done  
By Mr Nobody.



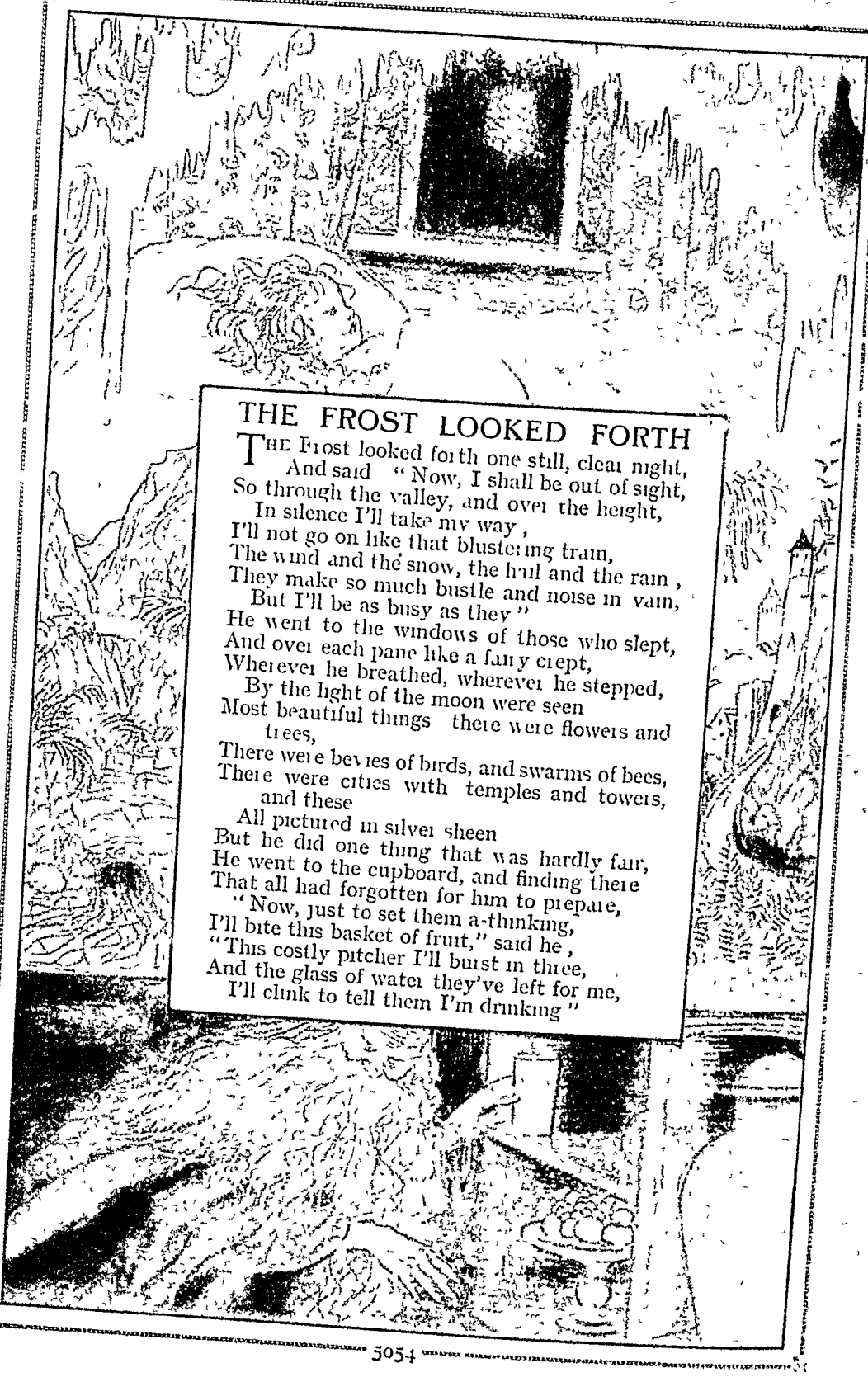
I HAVE a little husband,  
And he is two feet four,  
So he can reach the knocker,  
And ring at our front door

But when we want our dinner,  
He must take it down himself,  
It's really very awkward  
When a wife can't reach the shelf.

Perhaps I shall grow bigger,  
But this I surely know  
I cannot love him dearer  
If I grow, and grow, and grow!

He puts damp wood upon the fire,  
That kettles cannot boil  
His are the feet that bring in mud  
And all the carpets soil  
The papers always are mislaid,  
Who had them last but he?  
There's no one tosses them about  
But Mr Nobody

The finger-marks upon the door  
By none of us are made,  
We never leave the blinds unclosed,  
To let the curtains fade  
The ink we never spill, the boots  
That lying round you see  
Are not our boots, they all belong  
To Mr Nobody



## THE FROST LOOKED FORTH

THE Frost looked forth one still, clear night,  
And said "Now, I shall be out of sight,  
So through the valley, and over the height,  
In silence I'll take my way,  
I'll not go on like that blustering train,  
The wind and the snow, the hail and the rain,  
They make so much bustle and noise in vain,  
But I'll be as busy as they"  
He went to the windows of those who slept,  
And over each pane like a fairy crept,  
Wherever he breathed, wherever he stepped,  
By the light of the moon were seen  
Most beautiful things there were flowers and  
trees,  
There were beves of birds, and swarms of bees,  
There were cities with temples and towers,  
and these  
All pictured in silver sheen  
But he did one thing that was hardly fair,  
He went to the cupboard, and finding there  
That all had forgotten for him to prepare,  
"Now, just to set them a-thinking,  
I'll bite this basket of fruit," said he,  
"This costly pitcher I'll buist in three,  
And the glass of water they've left for me,  
I'll clink to tell them I'm drinking"



## THE FROST LOOKED FORTH

THE Frost looked forth one still, clear night,  
And said "Now, I shall be out of sight,  
So through the valley, and over the height,

In silence I'll take my way,  
I'll not go on like that blustering train,  
The wind and the snow, the hail and the rain,  
They make so much bustle and noise in vain,  
But I'll be as busy as they"


He went to the windows of those who slept,  
And over each pane like a fairy crept,  
Wherever he breathed, wherever he stepped,

By the light of the moon were seen  
Most beautiful things there were flowers and  
trees,

There were beves of birds, and swarms of bees,  
There were cities with temples and towers,  
and these

All pictured in silver sheen  
But he did one thing that was hardly fair,  
He went to the cupboard, and finding there  
That all had forgotten for him to prepare,

"Now, just to set them a-thinking,  
I'll bite this basket of fruit," said he,  
"This costly pitcher I'll burst in three,  
And the glass of water they've left for me,  
I'll clink to tell them I'm drinking"





# TWO CONQUERING KINGS OF PERSIA



When Cyrus the Great conquered Babylon, he restored to their own land the Jews whom Nebuchadnezzar had carried away captive, returning to them, as shown in this picture by Gustave Doré, the golden and silver vessels from the destroyed temple, that they might be used in the new temple which Cyrus ordered to be built.



Alexander the First gathered a vast army for the invasion of Greece, and built a bridge of boats a mile long across the Hellespont, the channel now called the Dardanelles. When the stormy waves broke his bridge, he ordered a hundred lashes to be given to the rebellious sea. In this picture we see the king crossing the Hellespont.

world before them Cyrus was a vassal of Astyages, and after the revolution which made him king of both the Persians and the Medes, the two nations settled down to an equality, and became, to all intents and purposes, one people.

### THE WEALTHY CROESUS AND THE ALL-CONQUERING CYRUS

The genius of Cyrus soon led him to extend this Medo-Persian Empire over the western part of Asia Minor. There was in Lydia at that time a king so rich that the expression "as rich as Croesus" has passed into a proverbial way of describing a man of great wealth. He did his best to arm his country against the invaders, but his allies failed him, and in the most tragic and rapid manner Cyrus became master of all the part of Western Asia that is washed by the Black Sea and the Mediterranean.

And then, about 539 years before Christ, came the turn of Babylon! Some of the barrel-shaped cylinders on which Babylonian history is written are now to be seen in the British Museum. Those of Nabonidus, King of Babylon at the time that Croesus was doing all he could to defend himself against the invincible Cyrus, tell of the searching for records of olden times, of the building and rebuilding of temples for the gods, and of the prayers Nabonidus offered up for himself and his son Belshazzar.

How strange it seems to us! The father absorbed in past history, and honouring the gods, the son carelessly feasting, while the renowned Cyrus, with his army, was actually outside the huge walls, using the powers of his great mind to take their capital!

### AN ARMY THAT MOVED A MIGHTY RIVER OUT OF ITS WAY

His cylinder gives the account of how he did it, how the tawny waters of the Euphrates, which flowed through the city, were changed from their course, and the army poured in by the river-gates. It tells, too, how the conquerors entered without battle, so that the city was spared tribulation. Mention is also made of the homage and tribute paid by the inhabitants and peoples round, and how Cyrus pleased the people by restoring the images of the gods to the shrines to

which they belonged in other parts of the country. The tablets of this reign and the succeeding ones show that life went on in the city and country much as it had done before the Persian conquest.

The hum of the old busy life seems to fill our ears as we read from the clay records of the trade and agriculture, the debts and loans, the planting of date-groves, the apprenticeship of lads to learn trades, such as baking, weaving, stone-cutting, with hundreds of other details, as appropriate to the life of to-day as to that of the age of Cyrus.

The religion of the newcomers differed at first very much from that of the Babylonians and Assyrians. It was much simpler and purer, though as time went on it was influenced by the idolatries of the older people. Ormuzd was the name of the one great god who sent the people victory and safety and every other blessing.

### THE WISE MEN OF THE EAST WHO WORSHIPPED FIRE AND SUN

The famous old faith from the Far East, which held the sun and fire in adoring reverence as the expression of the All Ruler of the world, was taught to the Medes and Persians by the great Zoroaster. The priests of this wonderful religion were the magi, or wise men, who, later on, became very powerful in the state.

Cyrus showed much sympathy with the Jews, who also were worshippers of one God, and had been long held captive in the country he had conquered. It was in his day that the joyful processions of the Great Return began to set out across the desert from Babylonia towards the home which they so ardently longed for. As they went, they sang the songs that were impossible to them in the "strange land" of their exile.

After the great Cyrus came his son Cambyses, who wrought much misery and havoc in his own family and in Egypt, where he went as conqueror.

Darius the Great, who followed Cambyses, though not of the family of Cyrus, was a vigorous and strong ruler, crushing rebellions as they arose in the various parts of his immense empire, and arranging for its government and good

order with great ability. There are many tablets in the British Museum of the reign of Darius comprising all sorts of documents about sales of houses and lands, partnerships and loans of silver.

Much about this king has been learnt from the various inscriptions found on rocks—chiefly that of the rock of Behistun which has proved such a valuable key to reading the cuneiform writing. The account of the wars and conquests of the great king had to be cut in the Babylonian and Scythic languages as well as in Persian, so that the chief nations under his rule might read and understand. We have, too, a fine portrait of the king, cut in the rock, receiving the submission of the chiefs of revolted nations, all roped together.

Other portraits of Darius are on his gold and silver coins, which were of great use in the trade that grew up between the various provinces of the empire.

#### KING DARIUS, THE HUNTER OF LIONS AND THE FRIEND OF DANIEL

A cylinder seal of the king, giving his name in the three languages, and showing him hunting a lion from his chariot, reminds us of the particulars that we have of this king in the Bible story of Daniel. On the slabs of the Assyrian kings we can see the cages in which the lions were brought to the hunting-fields from dens such as the one into which the aged Daniel was thrown, and a seal—the kind that is rolled over moist clay—is shown, that might well be the one which Darius used to prevent any tampering with the order he had so reluctantly given. The word of the king, once passed, by the laws of the Medes and Persians, could never be broken.

Of late years the sites of the great cities of the empire have been dug over, and wonderful remains have been found and studied. We can see at Persepolis the ruins of the greatest of the palaces, not only its ground plan, but the "noblest flight of stairs in the world," and grand gateways with bulls copied from those in the Assyrian palaces. Here, too, are the ruins of the magnificent pillared halls—larger than any cathedral in England. The sculptures show us the Persian guardsmen and attendants who waited on the great kings. At Susa, the ancient capital of the Elamites, and at Ecbatana, the great

city of the Medes, are also found remains of splendid palaces built by Darius and his successors. As we look at the map to find these cities, and note the extent of the dominions of Darius, we are filled with wonder.

#### A KING'S DREAM OF TWO EMPIRES, AND THE VOICE AT THE ROYAL FEAST

From countries round the Indus river the empire stretched to the Caspian and Mediterranean seas, and far into Egypt, where Darius improved or built a canal from the Nile to the Red Sea. Great roads connecting the various provinces, bridges, inns, watch-towers, were built by his orders, and a royal post was established. Darius also made his way across the Bosphorus into Europe, and across the Danube, extending the boundaries of the empire and paving the way to attempt further conquest in the West.

For a great struggle was coming on. The provinces in Asia Minor, which Cyrus gained for the Persian Empire, were peopled by Greeks from over the sea of many islands. These people loved freedom, and hated the government of an absolute monarchy. By degrees discontent led to rebellions; rebellions to savage punishments and threats of vengeance. Particularly angry was Darius with the Athenians, who had not only dared to help their fellow-countrymen across the sea, but had refused to submit in any way to the great kings.

While he was nursing his plans to make himself absolute master of the revolted states, and of Greece, and perhaps of all Europe beyond, it is said that he had these words said to him three times a day, when he sat at his luxurious feasts: "Master, remember the Athenians."

#### HOW DARIUS MARCHED INTO EUROPE OVER A BRIDGE OF BOATS

There was furious fighting with the Greeks of Asia Minor, whose cities were burnt, and whose people, often quarrelling among themselves, were overcome by the huge numbers of the army of Darius, and were beaten down and destroyed. So the beautiful bright coast with its sunny islands and lovely bays became ruined and desolate.

And then Darius "remembered" the Athenians. He sent an immense army, gathered from all the countries of his empire, under his son-in-law, and they marched over a bridge of boats—as Darius had done before when he went

to conquer the Scythians on the Danube—across the Hellespont, which we now call the Dardanelles, into the country which is now Turkey in Europe. They expected to make short work of the enemy, but the rough seas wrecked their ships, food ran short, and the wild men of Macedonia and Thrace bristled over the rocks and crags, and held the way, so that the army had to return without getting to Athens at all.

#### THE TERRIBLE MOMENT WHEN THE FATE OF EUROPE HUNG IN THE BALANCE

But Darius, with his great wealth and resources, soon fitted out another expedition. This time it sailed across to Greece in 600 ships, passing the island of Naxos, and landed only a few miles from Athens. It was an awful moment for the Greeks. It was almost worse for them than it would have been for the English if the Spanish Armada had sailed up the Thames and landed at Gravesend.

Great was the excitement, terror, and dismay in the little states of Greece at the news of the landing of the Persian hosts and the burning and sacking of one of their most beautiful and prosperous cities.

The details of the manner in which the Greeks met the trouble we read in the Story of Greece, beginning on page 512. It is notable that though there were ten times as many Persians as Greeks in the battle of Marathon which followed, the Greeks won the day, and drove back the Persians to their ships. Their attempt to land nearer Athens was prevented, and so a second time the Persians had to return home without any glory. About a hundred generations of men have lived and died since Marathon, but the result of that famous battle affects the world to this day.

#### THE GREAT ARMY OF THE SOLDIERS OF FORTY-SIX NATIONS

Darius was more furious and determined than ever when the news of Marathon came to him, and he vowed to take no rest till the insolent Athenians were dragged in chains to Susa. Swift messengers were sent along the royal roads to bid the governors of the provinces send men and money; but, in the midst of his plans, Darius died, and his son, Xerxes, succeeded him. The handsome, gay young man cared more for pleasure and an easy life than for warfare, so that it seemed at first as if the conquest of Greece might be given up.

But, in the end, he was persuaded to continue his father's work, and enormous preparations were made for the invasion. The army raised was, perhaps, the largest ever seen in the world, greater even than the Grand Army of Napoleon. It is said that forty-six nations sent their best soldiers, men of all colours—black Africans, and tawny and white natives of far distant parts of Asia. And these soldiers, with their diverse clothing and arms, passed to the war on foot, on horseback, on elephants, on camels, and on ships.

Xerxes was in the midst of the host himself, with an immense following of servants and courtiers, surrounded by every sort of luxury that enormous wealth could provide. How changed was all this from the days of his poor and hardy and successful forefathers!

It took the army seven days and seven nights to cross the double bridge of boats across the Hellespont. As it moved on towards Greece, many cities were ruined by having to supply the vast quantity of food that was needed even for a single meal.

#### THE LITTLE BAND OF SPARTANS WHOSE NAME CAN NEVER DIE

What a prospect for the Greeks! They heard with terror of this multitude moving ever steadily onwards to overwhelm their small country and its small army, especially as at that time there was so much jealousy among the states that it seemed impossible to get them to act together. The Persians had to pass a ridge of high mountains which protected Athens to the north, and between the bog on the edge of the sea and this high ridge there was a pass near some hot springs. This was the pass of Thermopylæ.

Here was fought one of the best and bravest fights in history, one of the few fights where failure was in effect a never-dying victory. A few Greeks held the pass through two days and nights against the hosts of Persians and Medes. These were slain in heaps as they rushed on the solid wall of Greek spears. But a traitor told the Persians of another pass in the mountains, and led the army round by it in the darkness. Some of the Greeks went away; but the little band of Spartans, under Leonidas, determined to conquer or die, and made a final stand, surrounded by overwhelming

numbers All of them were shot down by Persian arrows to the last man And so Xerxes got to Athens Nearly all the inhabitants had fled He killed the remaining few hundreds, and set fire to the fine buildings, and then marched on to witness the great sea fight from a cliff looking over the Bay of Salamis No doubt he felt quite certain that his splendid fleet of over a thousand ships, well equipped and manned, would make short work of the small Greek fleet, which numbered only about 350 vessels

But, as the day wore on, Xerxes became more and more uneasy, and at last started up from his ivory throne, which was carried round with him, in wrath and dismay, as his thousand ships crowded and jostled together in the narrow mouth of the bay, so that many were run down and sunk Again and again the loud battle-cry of the Greeks came up to him as they dashed their brazen prows into the ships nearest them, and boarded one after another with the help of their long spears

#### HOW THE GALLANT GREEKS DROVE THE HUGE ARMIES OUT OF EUROPE

Xerxes raved like a madman before night, as he saw his ships, squadron after squadron, turn and sail out to sea But he, too, ran away homewards, and left his general behind with three times as many men as the Greeks could gather, to finish the campaign later A few months later this remnant of the great host was destroyed and scattered at the battle of Platea And so ended the great Persian wars in Europe, when gallant little Greece for twelve years withstood the largest armies ever collected

There was a little boy born in Halicarnassus, one of the Greek states in Asia Minor, in the midst of these exciting days when Asia threatened to conquer Europe He was four when the battles of Thermopylae and Salamis were fought When he grew up, his great object in life was to write a full account of the Persians and their world struggle with the Greeks, so he collected materials for his work in various parts of the empire This was Herodotus, the Father of History, who so admired the Nile and great buildings of Egypt, also the mighty walls, hanging gardens, and temples of Babylon.

Many of his wonderful stories have been proved to be fables, but, in his pleasant, chatty way, he gives us much fact as well as fiction about those soul-stirring times, when actual witness of the great events about which he wrote so vividly were still alive

#### THE BEAUTIFUL QUEEN OF PERSIA WHOSE STORY IS TOLD IN THE BIBLE

For details of the court life of Xerxes, we may turn to the Book of Esther in the Bible, for many believe that King Ahasuerus in that story is none other than he who was carried round in the ivory throne and threw fetters into the unruly Hellespont when its storms destroyed the first bridge of boats However this may be, we can gain a good idea of how the rulers of Persia lived in the days of their great power, by clothing the visions of magnificent palaces shadowed in the ruins unearthed at Susa and Persepolis, with the vivid account of life at their court, as seen by the beautiful and patriotic Jewess who became Queen of Persia

Artaxerxes, one of the sons of Xerxes, comes into a Bible story too, for he had a Jewish cup-bearer, Nehemiah He was allowed to leave his duties at court, and go to help his brethren to rebuild the walls of Jerusalem and reorganise the government of the state

In the reign of Darius II., another of the sons of Xerxes, Persia lost Egypt, which it had held, in spite of many rebellions, for more than a hundred years There were other signs that the great empire was beginning to break up

#### THE FALL OF THE PERSIAN MONARCHY AND THE RISE OF ALEXANDER

Among these signs were dark plots and quarrels between the nobles and princes, which came to a height when two of the sons of Darius II were struggling for the throne Cyrus, the younger, knowing that Greek soldiers were better than the troops gathered together from different nations in Asia, paid 13,000 Greeks to come and help him fight against his brother.

Cyrus was slain and his army defeated at Cunaxa, near Babylon. The Greeks, now reduced to 10,000 men, fought their way back to the coast amid difficulties under the command of Xenophon, the famous historian The story of this retreat we read on page 507b

and came after them in Western Asia. In the Story of Rome we read how the mighty armies of that empire rolled up eastwards against the Parthians, time after time, like waves dashing on a rocky shore. Sometimes the Romans had the advantage, sometimes the Parthians, but in the end, just as the Parthian Empire was nearing its fall, its last ruler, Artabanus, about 216 Anno Domini, wrested a huge sum of money from the Romans as a war indemnity, after two crushing defeats.

About ten years later, the long-prepared and long-delayed insurrection of the Persians occurred, in which they declared their independence. Artabanus was slain, and a king, Artaxerxes, or Ardashir, descended from the old Royal House, became head of a new Persian Empire, often called the Sassanian.

For six centuries the Persians had had to submit to a foreign yoke, first that of Alexander and his successors, then to that of the Parthians. But during that time they ever bore in mind the ancient glories, the purer religion, and the future hopes of their race.

#### HOW PERSIA ROSE TO POWER AGAIN AFTER HUNDREDS OF YEARS

When the right moment came, by swift revolution and decision, the old empire sprang to life once more. On the back of the coins of Artaxerxes is a picture of the sacred fire, tended by a priest, showing the religious side of the uprising and remaking of the empire. The idols of the Parthians were destroyed, and the magi, or wise men, who taught the old faith of Zoroaster, were gathered together at Persepolis and given an important share in the government.

It was at this time that the sacred precepts and sayings of the Persians were collected and put into writing. We can read to-day these beautiful teachings in the Zend-Avesta, as the Bible of the Persians is called. It is still the guide of many learned and good men, the Parsees of Persia and India.

Artaxerxes also re-established the government much after the form of that of Darius the Great. Much of the art of the Sassanian times has been recovered from the ruins of their great cities, and a deeply interesting study it makes, bringing home to us how much wealth and magnificence and

taste for the beautiful belonged to these centuries of national revival. Many were the wars during the reigns of the Sassanian kings, some of whom were splendid generals. Among them there stand out the names of two kings named Sapor, and of two named Chosroes. The first Sapor accomplished the brilliant feat of making the Roman Emperor Valerian surrender with all his army, this event is shown on a huge rock sculpture.

#### THE BREATHLESS RACE TO THE GATES OF THE CITY

The second Sapor overthrew the Emperor Julian in a most thrilling campaign. The Romans had a large fleet of boats on the Euphrates, and in a sculptured picture on a rock we may see Julian transporting his fleet and army by canal from the Euphrates to the Tigris and meeting the Persian army with its elephants and chariots. Then there was a breathless race to get to the important city of Ctesiphon. The Persians dashed in first and just closed the gates upon their pursuers.

The end of this exciting campaign saw the great Julian dead, and his successor was forced to listen to terms from Sapor such as the all-conquering Romans had never before granted.

The reigns of the two Chosroes bring us to the times of conflict with the Eastern emperors, Constantine and Heraclius, as we read on page 3878.

#### HOW PERSIA LAY UNDER THE CONQUEROR'S HEEL FOR 800 YEARS

The conquerors of the Eastern Empire were also the conquerors of Persia. When the famous leathern standard, the blacksmith's apron studded with diamonds and other precious stones, fell into the hands of the Mohammedans after four days of terrible fighting, the nation it had so often led to victory, ever since the far-off days before Cyrus, passed into subjection, and lay under the heel of the conqueror for over 800 years.

The national religion and the national independence were gone, but the spirit was not dead nor the national ability and courage, and at last the time came for Persia to rise again with renewed life and strength. We read its later story on page 3873. It may well take pride even to-day in its long and wonderful record of the past.

The next story of Countries is on page 5121.

who would not deny the reformed doctrine, but was put to death chiefly because he declared that it was wrong to slay any man for his belief; so that he was the first martyr who died for claiming that every man ought to be permitted to obey his conscience.

**A BRAVE WOMAN WHOSE FAITH COULD NOT BE SHAKEN BY SUFFERING**

The second was a lady named Anne Askew, who was zealous in spreading the new teaching, and though she suffered such terrible torture that the Lieutenant of the Tower stayed his hand and would inflict no more on her, yet she would not recant, nor would she do so even when she was brought to the stake and promised a pardon.

But her death seemed so cruel a thing that no others were tortured for many years afterwards.

In Scotland, the first Protestant martyr was Patrick Hamilton, who was burned at the stake and, after the fire had been long alight, held forth his arms into the flames to show that his courage was unabated. Following on, the most famous of these sufferers was George Wishart, the teacher of John Knox after whom no others were burnt in Scotland.

But nine years after Anne Askew's death, when Queen Mary was on the English throne, and all men were bidden to return to the Roman Catholic faith, there was a great persecution, so that in four years there were nearly three hundred persons who died martyrs for the Protestant faith, yet all of them might have won pardon by recanting before the judges and professing that they had erred in their belief.

Among those who died by fire in the first year were priests notable for their learning and good works. With them were four bishops, and, soon after, the Archbishop of Canterbury himself, and then no more persons of high estate were executed, only those of humble station.

**HOW THE SUN BROKE THROUGH THE SKY AND SHONE UPON THE DYING MARTYR**

There is a beautiful story about one of these last, a youth named William Hunter, who, when he was bound to the stake, besought those who were standing by to pray for him, to whom one made the cruel answer that he would pray for him no more than for a dog. "Then," said he, seeing that by man he was refused even this kindness, "Son

of God, shine upon me!" And straightway the sun broke through a great cloud that was overhead, and so bright a light fell upon him as he looked up to heaven that he could not but turn his face aside. And those who looked on thought that God had answered his prayer.

There was another lad, whose name is forgotten, to whom the judge said in pity, "Think before you answer. Can you bear to suffer the fire? Recant, and you will be free and safe." But for answer the lad thrust his hand into the flame of a candle, and so held it.

Some there were who met their cruel doom with glad triumph. Such a one was Rogers, a famous preacher, who had helped in translating the Bible into English, who, when the fierce flames leaped about him, bathed his hands in them as though they had been cold water.

And another was Rowland Taylor, the beloved Vicar of Hadleigh, who, having been condemned in London, was carried back to his own parish to die. Then, his wife and daughters coming to meet him on the way on a dark winter morning, he spoke words of comfort, bidding his wife be of good cheer, for God would be a father to his children.

**THE FOUR BISHOPS WHO WERE BURNT BY QUEEN MARY**

The four bishops who suffered martyrdom were Robert Ferrar, John Hooper, Nicholas Ridley, and Hugh Latimer. Of these, Ferrar was one who had made no great stir, but, being made a bishop in the Protestant reign of Edward VI, was disliked for seeking to reform evil habits among his people, and being already in prison, having sundry foolish charges made against him, when Mary came to the throne he was not let go, but was charged with heresy, and so died a martyr.

Hooper and Ridley were both very zealous reformers, but Ridley was the man whose learning and wisdom won the trust of Archbishop Cranmer, and it may be that he, more than any other, gave to the laws of the English Church the shape which they have to-day. But Hugh Latimer had already become a famous preacher when Ridley was but a young man, and had found favour with King Henry because he spoke so freely and frankly. When some would have charged him with heresy, Henry set

them at naught and made Latimer a bishop, and a right good one Ridley and Latimer and Archbishop Cranmer were very great friends, and when Mary laid hold on them they were all cast into prison together, and there they often held council with one another.

But afterwards these two were parted from Cranmer, and they were doomed to die at Oxford. When they were taken out to be burned, Ridley showed a stout courage, and old Latimer spoke words that have rung through the ages, saying "Be of good comfort, Master Ridley, and play the man."

The older he grew, the more he became assured that the new doctrines were right, and because he was archbishop, and head of all the clergy in England, Queen Mary was the more anxious that he should be persuaded publicly to recant his heresy.

To this end he was parted from Ridley and Latimer, who helped to strengthen him, and was caused to look from the window of his prison when they were being martyred. Then there came upon him great fear and doubting, when he had none to lean upon, and at last he was persuaded to write that he had



HUGH LATIMER, THE ELOQUENT BISHOP AND MARTYR, PREACHING AT ST PAUL'S CROSS

we shall this day light such a candle, by God's grace, in England, as I trust shall never be put out."

The story of Cranmer is the saddest, and yet the most glorious of all. For he was by nature a timid man, yet one who had been forced into his high estate by King Henry. And in Henry's reign he had sought always to persuade the king to suffer Luther's doctrines to be taught, and had won from him leave to set up the Bible in English in all churches, and after that, in Edward's reign, it was he who, with the aid of Ridley and others, prepared the Book of Common Prayer which is used in the services of the Church of England.

erred from the beginning, and that what he had taught for truth had been falsehood. Yet, having fallen, his courage came back to him at the last hour, and he proclaimed that he repented not what he had taught, but his grievous sin in what he had just written denying the truth. And so he, coming to the fire, held forth in the flame the right hand which had offended in penning those words, so that it was first consumed, and he never flinched till the life was gone from his body. And because of his fall men account him the least among the martyrs for the faith, yet it may be that he was the greatest of them all.

The next Golden Deeds are on page 517.



I was not always a thing with a china face and a china body, and eyes that open and shut. Not very long ago I was a pretty little girl, and I lived in a beautiful house, and had more toys than I could play with. Unhappily, I was, like Babs, a very naughty girl, and at last I became a nuisance to everybody around me. One evening, when I had been sent to bed for poking my dollie's face into the fire, a fairy came into the nursery and changed me into a doll. 'A doll you shall remain,' she said, with a terrible look, 'until a little girl as naughty as you has inflicted on you the suffering that you have inflicted on others. And you shall not be restored to your proper shape,' the fairy went on, 'until this naughty little girl herself becomes a good little girl!'

house with my wooden sword, knocking down everything in my way. I broke my mother's flower-vases, and upset my daddy's ink-pot. So I was changed into a toy soldier, and I shall not be delivered from the spell until the naughty boy to whom I belong becomes a good boy. But I am beginning to despair of Ronnie. You see in me, Miss Dollie, the only survivor of a great army. Yes, I had forty-eight men under my command this morning, but Ronnie has already broken off all their heads, and he flung me into this corner because mine would not come off easily. It was this that made me say, 'Toys we are—ill-treated toys—and toys we shall remain for ever!'

"For my part, as I have said," exclaimed Miss Dollie, "I still hope for



ONE EVENING, WHEN I HAD BEEN SENT TO BED, A FAIRY CAME AND CHANGED ME INTO A DOLL.

"Well," said Captain Blue, glancing in pity at her broken nose, "I should say that the first part of your punishment is over."

"Yes," said Miss Dollie, "Babs is certainly as naughty as I ever was. But will she ever become a good little girl? I am afraid that the fairy will come and change her also into a doll. I dare say you know, Captain Blue, that all dolls are little girls who have been transformed because they became very, very naughty?"

"No," said Captain Blue, "I did not know that. But perhaps, Miss Dollie," he added, in a strange whisper, "you may not be aware of the fact that all toy soldiers are really little boys who have been transformed by an old wise magician. I was an exceedingly wicked little boy. I used to rush about the

better things. Have you not noticed how troubled the sleep of Babs has been since we began to talk? I am certain she has heard all we have said, for she is only in a sort of half-sleep. Of course, it seems to her just a dream, but she will remember it in the morning, and perhaps she will become a good girl, and get Ronnie to be a good boy."

And that is what happened. As soon as Babs woke up the next morning, she climbed on Ronnie's bed and told him her wonderful dream. Both the children resolved to be very good for the sake of the doll and the tin soldier, and when, a few days afterwards, their delighted mother took their broken toys away and replaced them with new ones, they knew that Miss Dollie and Captain Blue had at last been changed back into a little girl and little boy.

of good wine, which would make the hours pass. St Germain offered to send for them. A porter was despatched to Vidocq's wife, telling her to bring the wine.

While this man was on his way, Vidocq, lying on the bed, wrote a secret line for Annette, his wife, telling her to follow him in disguise and pick up anything he dropped. When she arrived with the wine, pretending to kiss her, he slipped this little screw of paper unobserved into her hand. Later in the day he suggested that it would be a good thing to inspect the house they intended to rob while it was daylight. They knew it, but he did not like to know where he was going.

The others agreed, and they went forth. Vidocq saw the place, and that was enough for him. On the way back, St Germain entered a shop to buy black crêpe for their faces, and Vidocq hastily wrote a few lines for the police. As they walked home together, Vidocq dropped this paper, his wife picked it up, and a few minutes later it was in the hands of the police officials.

When it was midnight the four men started out. They made their way quickly through the deserted streets, and came presently to the wall surrounding the house. All was still. They donned their crêpe masks, and set to work. They climbed one by one up the wall. Three of them dropped noiselessly down into the shrubs on the other side. Vidocq remained for a moment astride the wall. Suddenly out of the bushes sprang a force of police. The burglars fired their pistols, injuring some of the police, and Vidocq rolled off the wall as if shot by a bullet. The burglars were captured, but Vidocq was unhurt.

And now comes the story of an old sexton, greatly trusted for his piety, and highly respected by the priest and people of his parish. The priest, fearing the coming of the Cossacks, determined to bury the church plate. Another parishioner, a rich goldsmith, determined to bury all his jewels with the sacred plate. Who but the pious sexton should dig the hole? The hole was dug, the treasure buried, and the sexton crawled off to his duties. But one day he came crying to the priest. "The hole! The hole!" And, lo! there it lay open and empty—the treasure gone! No one could discover the thief, and

the matter was at last entrusted to Vidocq. When he had heard the story, he said "Arrest the sexton." And the pious sexton was arrested on suspicion. Then Vidocq disguised himself as a Jew pedlar, and one day presented himself casually at the door of the sexton's cottage. He offered things to sell, and offered to buy anything the sexton's wife might have in the house. But the old woman offered neither plate nor jewel.

The next step was to disguise himself as a German valet, and to get arrested and thrown into the same cell as the old sexton. At first the sexton would have little to do with his fellow-prisoner, but when Vidocq showed him that he had a gold coin sewn inside each of his buttons, and when, further, he called for a bottle of wine, the sexton became more friendly, and they exchanged stories.

Vidocq said he had buried some valuables belonging to his master in a wood, and when he got out of prison he would get those valuables, escape to Germany, and live a merry life.

The sexton said that he was tired of his wife, and that if he could escape he, too, would go to Germany and live a merry life. Vidocq was now certain that the crafty old fellow had got the treasure. He instructed the police to move them to another prison, and to bind them so loosely that they could escape. This was done. The spy and the sexton escaped into the woods, and then the sexton came to the place where the treasure was buried.

A spade was concealed in some bushes, and with this he dug up the spoil. As soon as he laid down the spade, Vidocq picked it up and said quietly that he would knock the sexton on the head if he resisted. Marched off to prison, the old sexton kept on muttering to himself "Who could have believed it? He looked so simple!"

For nearly twenty years Vidocq lived this exciting and dangerous life. It is asserted that he captured as many as 20,000 criminals in the rookeries of Paris alone. In 1812 Vidocq became the head of a detective agency in Paris, which proved successful; but it was thought that Vidocq himself originated many of the burglaries that he showed such ingenuity in detecting, so, after thirteen years in office, he was superseded.

# THE MARCH OF THE TEN THOUSAND

OF all the successful struggles against overwhelming odds that history relates, few can compare with the great march known as "The Retreat of the Ten Thousand." Famous in ancient times as a wonderful military achievement, it remains to this day a stirring record of courage and endurance.

In 401 B.C. Cyrus, son of Darius, made war against his brother Artaxerxes, who had succeeded to the throne of Persia. By various pretexts and deceptions he secured the services of about thirteen thousand Greeks, who marched with the rest of his army into Asia. At Cunaxa, near Babylon Cyrus was defeated and slain, and the Greeks found themselves alone in the heart of a hostile continent. They endeavoured to come to an agreement with Tissaphernes, the victorious general, to allow them to return safely. Tissaphernes met them with fair words, but when he had won their confidence he invited their leaders to a magnificent banquet, and treacherously slew all who came.

We may picture the plight of the unfortunate Greek army, deprived of many of their leaders, thousands of miles from home and kindred, and surrounded on all sides by hostile forces. It was impossible for them to push on into the unknown country, it was impossible for them to remain where they were. There was nothing for them but retreat, and retreat involved a long and terrible march through rough lands peopled by savage races. For the moment they were in the depths of despair.

In this perilous moment, when all seemed lost, a leader was found—a man who had joined the army as a simple volunteer for love of adventure. As the soldiers lay about, listless and dejected, Xenophon, an Athenian knight, asked himself "Why do I lie here?" The night is creeping on. The morning will probably bring the enemy, and defeat will be followed by insults, torture, and death. Am I to wait and do nothing until some officer comes forward to give counsel and to act? To whom am I to look for this, and am I not old enough for the task?"

He arose, and summoned the captains. To them he explained the danger of their position, and showed them that

their only hope lay in their weapons and right arms. He himself, he said, was willing either to follow or to lead. His eloquence won them over. They acclaimed him as their leader, and at once preparations were made for the retreat.

The wonderful march began. All the baggage that could be spared was burned, in order to leave as many soldiers as possible ready for action. Their course was marked out for them—they could only strive to reach the coast. They crossed a broad river, and encountered the first attack of the enemy. Slingers and mounted bowmen, whose weapons carried farther than those of the Greeks, hung on their rear and flanks and harassed them. Xenophon tried to repel the attack, but was defeated with great loss. To restore the spirit of his men, the leader took the blame of the defeat on himself, and reorganised his forces.

The Greeks marched on. Soon they came to a country which presented enormous difficulties to their retreat. Their hearts sank as they saw the terrible rocks and narrow ravines of a land inhabited by a fierce fighting race of hill-men. Had they once been caught in the narrow passes of this country, they would have been overwhelmed. They could only escape destruction by moving with almost incredible swiftness from height to height before the enemy could reach them.

Day after day they made their gallant marches till wild Armenia stretched before them. This country was swept by great winds and heavy snows, making it almost impassable. Moreover, the Greeks were crossing it at the most terrible season of the year—the winter.

Buffeted by tempests, drenched and blinded by raging snows, they struggled along. Their wonderful spirit urged them on, and not only did they repel the attacks of their foes, but they assumed the offensive, stormed the camp of the ruler of the province, and carried away much booty.

Then they crossed the Euphrates near its source, and encountered a wind of piercing coldness, while they forced their way with dogged persistence through snow that lay six feet deep. On they pressed, hampered by the

# MORE ADVENTURES OF BRER RABBIT

## THE TELL-TALE SPARROW

MR. JACK SPARROW was a perky, prying little creature, and he was always interfering in other people's affairs. One morning he saw Brer Rabbit talking and chuckling to himself, and he crept up and listened.

"Keiblinkety!" says Brer Rabbit. "I'm going to play another trick to-day on Brei Fox, sure as I'm alive."

"No, you won't," says Mr. Jack Sparrow. "No, you won't! I'm going to tell Bier Fox. I'm going to tell Brei Fox."

And off he flew, and Brer Rabbit began to feel mighty uneasy.

"If that there uppity little Jack Sparrow sees Brei Fox and warns him, then I'm done for," says Brer Rabbit to himself.

Just then Brer Fox comes whisking round the corner.

"You just stand off, Brer Fox!" says Brei Rabbit. "I hear you're going to send me to destruction, and destroy my family, and break up my little house. You just stand off!"



"STAND OFF, BRER FOX!" SAYS BRER RABBIT

Brer Fox he got mighty mad, and asked Brer Rabbit who'd been spreading such a monstrous tale about him, and Brer Rabbit indignantly said that he'd got it from Mr. Jack Sparrow.

In the afternoon Brer Fox heard Mr. Jack Sparrow calling out to him.

"Hold on, Brer Fox! Hold on, Brer Fox! I've got some astonishing news to tell you."

Bier Fox pretended he didn't hear, and laid down on the grass, and made out that he was going to sleep.

Mr. Jack Sparrow hopped up to him, screeching out:

"I've got something to tell you, Brer Fox, something astonishing to tell you."

"Get on my head, little Jack Sparrow, because I'm deaf in one ear and can't hear out of the other," says Brei Fox.

Jack Sparrow he hopped on Brer Fox's head.

"Hop on my tooth, little Jack Sparrow," says Brer Fox "because I'm deaf in one ear and can't hear out of the other."

Jack Sparrow he hopped on Bier Fox's tooth, and Brer Fox he shut his mouth, kerflop! And that was the end of the little tell-tale Jack Sparrow.

## MR. HORSE AND BRER FOX

ONE morning, after Brei Rabbit had been playing his pranks, Brer Fox set out in search of him.

"Blest if I don't pay that little varmint back," says Brer Fox.

But Brer Rabbit guessed what Brer Fox was about, and Brer Rabbit was also up early that morning, and rambling around, considering things. He saw a great big horse lying down in a meadow, stiff as a poker, and he crept up, and he crept round, and he watched that horse. By-and-by he saw the tail move, and so he knew the horse was not dead, but only asleep. Brer Rabbit stepped out into the road, and there he saw Brer Fox.

"Come on, Brer Fox," he says, "and let bygones be bygones. Here's enough fresh meat lying in the field to last you right through summer."

And he took and showed him the horse lying flat on the ground.

"Now just you fasten Mr. Horse down so that he can't get away," says Bier Rabbit, "and he's yours."

"But how am I going to do it?" says Brer Fox.

"Well," says Brer Rabbit, "if I was a great big creature like you, I'd

By-and-by Brer Fox and Brer Wolf came trotting down the road, talking very earnestly together. They were making a plan to catch Brer Rabbit.

"Now I'll tell you what to do," says Brer Fox to Brer Wolf "You just go and——"

"Mur—raow!" says Brer Rabbit, jumping up before them, and spreading out his paws, and shaking all the tangles of leaves sticking to his fur. "Mur—raow! I'm the Bogie-Man! I'm the Bogie-Man that gobbles up wolves and foxes, and I'm going to gobble up you!"

Brer Fox and Brer Wolf just looked at him. Then they sprinted off worse than if a pack of mad dogs was after them, and Brer Rabbit sat down in the middle of the road and laughed till he hadn't any more breath to laugh with. Then he went and frightened Mr Bear, and after that he trotted home and cleaned off the honey and leaves.

#### BRER RABBIT AND MR LION

ONE day all the animals, great and small, and wild and tame, met together in a mighty flutterment. A big, savage lion had settled in the



"YFS, HERE HE IS!" SAYS BRER RABBIT  
neighbourhood, and this lion said he'd kill everybody right off at once if they didn't arrange to give him three good meals a day. They were frightened

"Oh, what shall we do?" says Brer Fox, in a weak and trembling voice.

"Oh, whatever shall we do?" says Brer Wolf and Brer Bear.

"I know what we've got to do," says Brer Rabbit, looking mighty big and important. "We've got to do for Mr Lion, and I'm the man that's going to do for him at once," says he.

And away Brer Rabbit marched to Mr. Lion's house, and all the animals they stared after him in a sort of amazement.

On the road Brer Rabbit came to a deep well brimming over with water. There he stopped, and wetted all his fur, and tousled it, and rolled over in the mud. When he got up he looked the most miserable object you ever set eyes on, and he crawled up to Mr Lion's house as if he was just dying of want and weakness.

"Please, sir, you'll have to make your three meals on me to-day," says Brer Rabbit, in a very doleful voice.

"On you!" says Mr Lion, with an angry roar. "You miserable little varmint, there isn't a mouthful of you. You just go back and tell them to send me a good, fat bullock!"

"The other lion wants all the bullocks and sheep and deer," says Brer Rabbit, "and you'd best let him have 'em. He's stronger than you are, and fights better."

"Does he, indeed?" says Mr Lion, lashing his tail like mad. "We'll soon settle that. Come along, and show me where to find him. Come along, I say, or I'll snap your little head off!"

Brer Rabbit quickly took Mr. Lion up to the well. "Yes, here he is!" says Brer Rabbit, peering into the water and then pretending to start back in terror. "Don't you go near him. He's looking mighty wild and savage."

Mr Lion rushed up in a howling fury, and saw his own angry face reflected in the water. Thinking it was another lion, he sprang madly into the well, and there he got drowned.

"Drowning lions is like drowning wolves and bears and foxes," said Brer Rabbit afterwards to his admiring neighbours. "It's just a knack. It comes as easy to me as winking."

Then Brer Wolf and Brer Bear and Brer Fox began to think they'd better make friends with old Brer Rabbit.

bottom with terraces. Three times must you go withershins round it, saying "Open, door, and let me in! The door will then open."

What troubled Child Roland was the word "withershins," but on reaching the green hill he remembered that it was a magical movement. In order to go withershins, as the witches do, you must go from west to east, instead of from east to west, as the sun and the moon and the stars go.

Child Roland followed the directions that were given by the fairy henwife, and a door opened in the green hill, and closed behind him as he ran up a long passage leading to the palace of the King of Elfland.

He came to an immense hall upheld by pillars of gold and silver, and arches of diamonds. Hanging on a golden chain from the middle of the roof was a large, hollow, transparent pearl, and in the pearl was a magic carbuncle which lighted up the hall with a beautiful radiance. Rubies and emeralds flashed and flamed everywhere, and at the end of the hall Lady Ellen was sitting under a canopy, combing her golden hair with a silver comb.

"Go back, Roland!" she cried. "Go back! If you had a hundred

thousand lives, you could not win me back from the wicked King of Elfland."

Then, seeing that he was tired and hungry, she gave him a golden bowl full of delicious fairy milk and tempting fairy bread.

But as Child Roland raised the bowl to his lips, he remembered that if he tasted fairy food he would never see the light of the sun again.

"I will neither eat nor drink!" he exclaimed, flinging the bowl on the floor, "until I succeed in setting you free!"

With the sound of thunder the King of Elfland burst into the hall, and looked around him furiously.

"If I cannot take you alive, I will have you dead!" he roared.

Child Roland drew his father's magic sword, Excalibur, and rushed upon the king. They fought savagely and desperately for a long time, and at length, after a furious battle, Roland struck the king to the ground.

"Spare me!" cried the King of Elfland, "and I will not only set your sister free, but let your brothers depart also, and no harm shall befall them."

To this Child Roland joyfully agreed, and he returned in triumph to Carlisle with his two brothers and Lady Ellen.

## THE PRINCESS'S

"WHAT is the sweetest thing in the world?" said a father one day to his two daughters.

"Sugar," said the older girl.

"Salt," said his younger and prettier daughter.

Her father thought she was mocking him, but she held to her opinion, and a quarrel broke out between them over this trifling matter, and he at last pushed her out of the house, saying:

"As you hold that salt is sweeter than sugar, you had better find another home where the cooking is more to your taste!"

It was a beautiful summer night, and as the pretty maiden sat singing merrily in the forest around her father's cottage, a young prince, who had lost himself while hunting the deer, heard her voice, and came to ask her the way. Then, struck by her beauty and gaiety, he fell in love

## WEDDING FEAST

with her, and took her home to his beautiful palace, and married her.

The bride invited her father to the wedding banquet, without telling him that she was his daughter. All the dishes were prepared without salt, and the guests became very dissatisfied and began to murmur as they ate the tasteless food.

"There is no salt in the meat!" they shouted.

"Ah," said the bride's father, "salt is truly the sweetest thing in the world! But when my daughter said so I turned her out of my house. Oh, if I could only see her again, and tell her how sorry I am!"

Drawing the bridal veil from her face, the happy girl went up to her father and kissed him. And properly salted dishes of fish, flesh, and fowl were then brought in, and the marriage feast became quite joyful, and all the guests were very happy and satisfied.

a statesman, and as a scientist, and one of the fathers of the United States, is not a great figure in American literature. The first writer in whom we are interested was born in the auspicious year of 1783, when Britain recognised the independence of the United States. His name was Washington Irving, and April 3 was his birthday. His father had come from Scotland, his mother being of Cornish ancestry, and when we know that in his boyhood his favourite reading was found in the poems of Chaucer and Spenser, we can see that he was really a Briton born beyond the sea.

#### WASHINGTON IRVING, ONE OF THE FIRST WRITERS OF AMERICAN LITERATURE

Irving was in a lawyer's office when, at nineteen, he began writing little humorous articles in a paper edited by his brother. His health showing signs of weakness when he was twenty-one, he came over to England and the Continent for a long holiday, which did him so much good that he lived to be nearly seventy-seven. As a boy, he must have been of a very quiet and gentle nature. "Books of voyages and travels became my passion," he writes, "and, in devouring their contents, I neglected the regular exercises of the school. How wistfully would I wander about the pier-heads in fine weather and watch the parting ships bound to distant climes! With what longing eyes would I gaze after their lessening sails, and waft myself in imagination to the ends of the earth!"

When he returned to New York, he became a barrister, but, instead of practising law, joined one of his brothers and a friend in starting a journal, which proved so successful that he determined to devote himself to a literary life.

#### THE AUTHOR OF "THE SKETCH BOOK" AND "RIP VAN WINKLE"

The most important period of his literary work began in 1815, when he paid his second visit to Europe, a visit that lasted for no less than seventeen years. Here he wrote that charming work "The Sketch Book," which contains some of the most beautiful descriptions of historic places ever penned.

His gift of making the description of a place alive with human interest, and awakening in the mind of the reader that tender feeling which comes from the memory of a happy visit to some

interesting spot, was quite unrivalled, and now, more than eighty years after "The Sketch Book" was written, it is still widely read in our own land, as well as in his native country.

Irving's last great work was the "Life of Washington," America's hero, which he completed only a few months before his own death on November 28, 1859. Washington Irving, after all, was really more English than American in the character of his writings. He excelled equally as a historian, a descriptive writer, and a teller of tales, for his short story of "Rip Van Winkle," which is told again in *THE CHILD'S BOOK OF STORIES*, was surely one of the world's masterpieces.

The next name to engage our attention is one that young readers of several generations have delighted to greet, and many a grey-head will remember with pleasure James Fenimore Cooper, who was born at Burlington, New Jersey, on September 15, 1789, was in every way more American than Washington Irving. His ancestors had come from England two hundred years before he was born, so that he was essentially a son of America.

#### FENIMORE COOPER AND HIS TALES OF REDSKINS AND PIRATES

His father was a judge, and the youth enjoyed many advantages, being well educated at grammar schools and Yale College, before he went to sea in 1806. After two years in the merchant service he joined the United States Navy, and served in it until 1811, when he married and took up the management of the property he inherited.

For nine years he engaged in the pleasant life of a gentleman farmer, and had no notion at all of bidding for fame as an author. But, happening one day to read a story which he thought very poor, he asserted that he could do better himself, and, half in fun, sat down to the writing of his first book. The title of this was "Precaution," and, although it is described as a very ordinary story, his friends seemed to like it. So he determined to become an author. This was in 1820. During the next year he published "The Spy," a brisk and racy tale of the Great Revolution, and he found himself popular as a storyteller on both sides of the Atlantic.

intellect. He too, was a New Englander born at Boston on May 25, 1803. He was one of five children left fatherless in 1811 by the death of the Rev. William Emerson, a highly respected minister, whose widow was a woman of character and resource.

Poor Mrs. Emerson did her best to provide for the children, but Ralph and his brother Edward had at times only one overcoat between them, so that their schoolfellows would ask "Whose turn is it to-day?" The boys had to help in all sorts of household duties, and as they all seem to have been keen to acquire education, they had little time left for play. It was by the help of some friends that they were enabled to enter Harvard College, and even there Ralph waited at table to earn part of his board. There is no evidence that he was a particularly bright scholar, although he was clearly one of the most studious. After leaving Harvard he was a teacher for a time, and then in 1825 began studying for the ministry.

Four years later he became assistant, and, later, minister of the Second Church, Boston, but after three years, in which he had married and lost his first wife, he gave up his church, as his mind was troubled with doubts about the things he was expected to

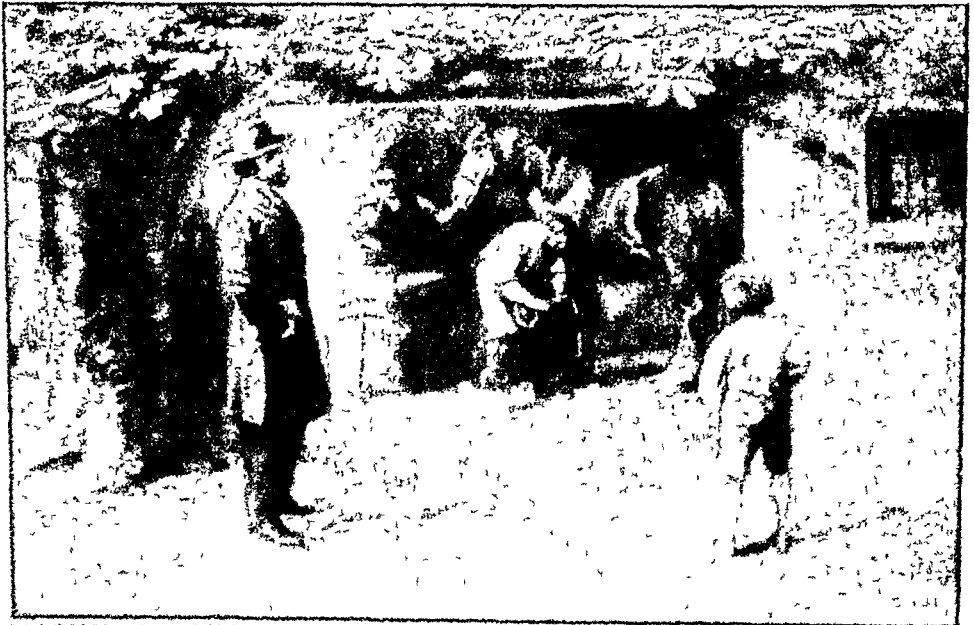
preach. Then he came to Europe, and in England made many friends, becoming particularly intimate with our great thinker, Carlyle—a friendship that endured for forty years.

In 1834 he had returned to America, and married again, settling down at the town of Concord, where he began to write his "Essays" and to deliver the lectures which very soon made him famous as a teacher. Concerning Emerson's teaching, we may read something of interest on page 4626 of this book.

#### A STORY OF EMERSON AT THE FUNERAL OF LONGFELLOW

In his old age memory began to fail him, and he would even forget the names of his most familiar friends. One month before his own death, which took place at Concord on April 27, 1882, he attended the funeral of the poet Longfellow, when he remarked "The gentleman we have just been burying was a sweet and beautiful soul, but I forget his name."

It was in the old town of Salem that Nathaniel Hawthorne, the greatest American novelist, was born, on July 4, 1804. Like Emerson and most of the great figures of American literature, he, too, was a New Englander. It is not necessary to say anything about him here, because we may read his life-story



LONGFELLOW WATCHING THE VILLAGE BLACKSMITH UNDER A SPREADING CHESTNUT TREE



his poetry, which is always tender in feeling and melodious. The most famous of his longer poems is "Hiawatha," that strangely beautiful story from the legends of the Indians, and perhaps the best known of his many shorter pieces is "The Village Blacksmith" printed on page 536. Longfellow died at Cambridge, Massachusetts, on March 24, 1882, and two years later a bust in honour of this sweet singer of the English tongue was placed in the Poets' Corner of Westminster Abbey.

In the same year as Longfellow, and in the same state, another great American poet, John Greenleaf Whittier, was born, on December 17, 1807. His boyhood was a harder time than that of Longfellow's, as he had to labour on a farm and to work at shoemaking in order to get the money to go for two terms of six months to the Academy of Haverhill, his native place. His parents were poor Quakers, and his father considered the boy's delight in writing verses a profitless pastime.

**WHITTIER THE QUAKER POET, THE SWEET SINGER OF FREEDOM**

The lad read the poems of Robert Burns, to whom he was doubtless drawn at the time by the fact that he also was a farm-worker. He would be about nineteen when one day, as he was mending a wall by the roadside in company with his father, the postman gave him a copy of a local paper in which he had the unexpected joy of reading one of his own poems. Quite unknown to him, his elder sister had sent this to the editor, and thus did the poet make his first appearance in print.

Soon afterwards he managed to get employment as a journalist, and for many years edited newspapers in different towns, and took an active part in the early days of the anti-slavery movement. Indeed, he has been called the "Poet Laureate of Abolition"—no unworthy title—as his poems did much to touch the conscience of the American people on the great question of slave employment. There is a feeling of sweetness and purity in all his poetry, a fresh and wholesome flavour that makes one feel it was written by a good man, and as his work is, so his life was. His books of verse were numerous, and consisted chiefly of short collected poems, of which "Maud Muller" and

"Barbara Frietche," which we may read on pages 3271 and 4851, are the best known. His longest poetical work, "Snowbound," was published in 1866. The poet lived for many years after the triumph of the noble cause for which he had fought with his pen, dying at Hampton Falls on September 7, 1892.

**EDGAR ALLAN POE, THE STRANGE MAN WHO WROTE "THE RAVEN"**

No two lives could show a greater contrast than those of Whittier and Edgar Allan Poe, who was born on January 19, 1809, at Boston. In the matter of literary genius, there is very little doubt that Poe was a greater man than Whittier or even Longfellow, and, indeed, it is not too much to say that, in the realm of poetry, his is the most individual voice yet raised in America. His character lacked stability, and his short life was one of much sorrow and disaster, for which he was himself largely to blame. His parents were actors, and they were both dead when he was still a boy. He had the misfortune to be adopted by people of some wealth, who spoiled him by giving him too much of his own way, and allowing him too much pocket-money. He was at school in the north of London for some years while the friends who had adopted him were travelling on the Continent. Then, when back in America at college, although a brilliant student, he ran into debt and drank heavily.

Altogether the story of Poe's life is not a profitable one, and it would almost seem that his highly developed powers of imagination had robbed him of some of the more manly qualities which are a worthy recompense to people of duller minds. He led a struggling life as a journalist, and yet contrived to produce many poems and short stories which must always rank as masterpieces of their kind. "The Raven," which is printed on page 4263, is a good example of his strange, weird poetry.

**THE DEATH OF POE, AND THE LIFE OF OLIVER WENDELL HOLMES**

Even his literary criticisms, rapidly written for his magazine, have never been surpassed by the most deliberate work of any of his countrymen. Edgar Allan Poe died in Baltimore on October 7, 1849, as the result of excessive drinking, and though his life was a failure, and though he is a man for whom we cannot

of "Uncle Tom's Cabin" Written out of her burning indignation at the terrible oppression of the negro slaves in America, this story so caught the sympathy of the whole world that when it was finished the writer found herself famous

**MRS STOWE AND HER FAMOUS STORY OF "UNCLE TOM'S CABIN"**

Though lacking many desirable qualities of literature, it is still an intensely moving tale, and it is doubtful if any other story has ever been so widely read Mrs Stowe, in later life, travelled much in Europe and wrote many other books, but while some of these are better written than "Uncle Tom's Cabin," the fame of that story has eclipsed everything else from her pen She died at the age of eighty-four at Hartford, Connecticut, on July 1, 1896

A strange and not altogether lovable figure now commands our attention for the moment The man who is so self-centred that he eschews the fellowship of other men, preferring to play the hermit, is seldom a creature to be admired In saying this we need not be guilty of belittling the place of Henry David Thoreau among the sages of America He was born at Concord, Massachusetts, on July 12, 1817, and at twenty years of age graduated at Harvard He was a friend of Emerson, but we can only imagine his human friendships as being about as genial as the relationship of two marble statues!

Thoreau is credited with great skill as a maker of lead pencils—certainly a worthy occupation; but when, at the age of twenty-eight, he built himself a wooden shanty at Walden Pond, in the woods not far from his native village, and there pottered about by himself for fully two years, observing Nature and employing himself on odd jobs, under the impression that he was helping to solve the problems of life, we cannot consider him a particularly manly person.

**THOREAU, WHO WROTE ABOUT HIS LONELY LIFE IN THE WOODS**

Thoreau wrote a very charming book entitled "Walden," describing his life in the woods, and this, first published in 1854, is still the most popular product of his pen Later, he showed some genuine spirit in his advocacy of freedom for the slaves, and in his public defence of John Brown, of Kansas He made other

sojourns in lonely woods, where his quiet and brooding spirit was more at home than amidst the hum and bustle of life in the cities He was friends, at least, with all the birds and squirrels; and with little children he could play with charming freedom, but his profitless love of solitary life is scarcely a thing to admire The men we should most admire are those with a high courage to face their destiny on the common battlefield of humanity, or those who love their fellow-beings well enough to delight in the society of their kind Still, Thoreau has many followers and many admirers, and though we may neither like the character of the man nor care for the starveling gospel he has preached, we cannot but admit the interest of his writings and his claim to a place among America's famous authors He died at his native town on May 6, 1862, so that his study of Nature's ways and his observance of the "simple life" did not bring him length of days

**JAMES RUSSELL LOWELL, POET, SCHOLAR, HUMORIST, AMBASSADOR**

Once again it is a New Englander that greets us in America's roll of fame James Russell Lowell, born at Cambridge, Massachusetts, on February 22, 1819, owed much to the culture of his parents and the comfortable circumstances in which his early life was passed He, too, was a distinguished student of Harvard He was already a poet of some promise when he took his degree in law and set out to practise as a barrister

It was due to the influence of his sweetheart that Lowell gradually devoted himself to authorship instead of the law, for she also was something of a poet. He succeeded Longfellow as professor of Spanish and French at Harvard in 1855, having previously equipped himself for the post by a stay in Europe to further his studies, and for twenty years he devoted himself to this work and the writing of literary criticism

He was also editor of important American reviews, and in 1877 his country honoured him by sending him as ambassador to Spain, and afterwards to England In 1885 he went back to his native town, and there continued his literary labours until his death, on August 12, 1891 Lowell is eminent among Americans as a great scholar; he had a profound knowledge of books,

shapeless songs, full of real poetic power, was the forerunner of many books, and the most characteristic, but it is doubtful if critics will ever agree in their opinion of the writer, beyond admitting that Whitman was at least a great force in modern American thought, that in his individual voice we hear also the voice of America.

#### WHY WE SHOULD TAKE OFF OUR HATS TO WALT WHITMAN

Whitman's father was a worker with his hands—a carpenter and builder—and Walt, though early in life engaged as a school teacher, was also employed at one time as a printer and again as a carpenter. He wandered much throughout the wide lands of the West, edited newspapers, and made friends with all sorts of humble folk. One winter he drove a stage-coach for a time, in order to keep the place of a driver who was lying ill, and in this we have the real large-hearted man, who sings of his love of comrades in his strange songs. During the American Civil War he volunteered as an army-nurse, and for some years he laboured like the giant he was, tending the sick and wounded, all of whom loved the great, gentle fellow that could minister to them with all the tenderness of a woman.

Abraham Lincoln said of him "He looks like a man!" He was indeed a man, but even his splendid frame could not stand the strain put on it during the war, and when, in 1873, he became partly paralysed, that was the penalty he paid for his services to his fellow-men. In his later years however, he enjoyed many serene days, and was not without honour even in his own country. Whatever we may think of him as a poet, we must take off our hats to the man, Walt Whitman.

#### BRET HARTE, WHO SOUGHT GOLD AND GAVE THE WORLD SOMETHING BETTER

The last of the great American writers with whom we are here concerned did not very long ago in England, where he had lived for many years. Francis Bret Harte had a varied and picturesque career, and many of his own experiences of the rough life in the pioneer days of California were used by him in his inimitable short stories and poems. He was born at Albany, in New York State, on August 25, 1839, his father being an eminent scholar, so that Francis

started out with a distinct bent towards the delights of reading and writing. He was only eleven when his first poem was printed in a New York newspaper, but this was only made fun of at home. His father died when Francis was still a youth, and at the age of seventeen he set out to seek his fortune in the goldfields of California. Like many another, he did not find gold for the seeking. He tried many occupations, and was also a soldier for a time, rising to the rank of colonel during the Civil War.

It was while engaged as a type-setter on a San Francisco newspaper in 1857 that Bret Harte began to write short sketches, some of which he himself set up in type. Nine years later he was the editor of a new magazine in San Francisco, and in it he published his famous story, "The Luck of Roaming Camp," which is certainly one of the finest short stories ever written. That and "The Heathen Chinee," a delightfully humorous poem, proved sufficient to make his name famous, and for the rest of his life he maintained a great reputation as a writer of tales. Bret Harte came to Glasgow as American Consul in 1880, and in 1885 settled in London, engaging solely in literary work until his death at Aldershot, on May 6, 1902.

#### HOW "MARK TWAIN," THE HUMORIST, GOT HIS NAME

Of the great American writers still alive, the world-famous humorist, Mark Twain, author of the celebrated "Jumping Frog," "Innocents Abroad," and other entertaining fiction, is the contemporary of most of the poets and story-tellers whose lives we have been discussing, for he was born on November 30, 1835, and has had a life resembling in some ways that of Bret Harte. His proper name is Samuel Langhorne Clemens.

The name which he has made familiar all the world over he adopted from the call of the Mississippi boatman who takes the sounding of the river to let the captain know the depth of water, and calls out, "Mark twain," meaning, 'by the mark, two fathoms,' when the line indicates that depth of water. Mr. Clemens was himself a Mississippi pilot, and among the many books he has written is one describing his life on that great river of the New World.

The next Men and Women begin on 519

all we can possibly know about this man, because Jesus loved him, and because the Master's love tells us that John best understood Him. Jesus loved all His disciples. We may even doubt if He had anything in His heart but pity and compassion for Judas, but to John He gave a large measure of this divine affection. It is clear that John earned this love by the beauty and sympathy of his understanding. He was the disciple who was nearest to Jesus.

There were three intimate disciples among the twelve, an inner circle mysteriously closer to Jesus than the other nine, and these three were John, his brother James, and Peter. Luke tells us that Jesus committed to John and Peter the arrangements for the Last Supper. Peter, John, and James alone witnessed the Transfiguration. They alone were present, according to Mark, at the raising of the daughter of Jairus, and in the dark hours of Gethsemane. Mark tells us that they were present with Andrew at the healing of Peter's mother-in-law, and, looking from the Mount of Olives to Jerusalem, it was they who asked when the temple should be destroyed.

#### THE DISCIPLE WHO BEST UNDERSTOOD THE LOVE AND BEAUTY OF JESUS

Although it was to Peter that Jesus confided, as it were, the charge of His brotherhood, it was to John that He gave the fullest measure of His friendship. Why was it not to the best-beloved disciple, the disciple who most spiritually understood Him, that Jesus confided the founding of His brotherhood? Because, surely, other qualities than love and discernment are necessary for headship. If Jesus had established a house, He would have given the control of it to Martha, but to Mary He would still have given the greater blessing.

Peter could found and manage the brotherhood, it was John who could breathe into it the love and beauty and mystery of the Master. So we see that John outlived all the other disciples, and tarried on the earth till the idea of Jesus' character—the idea of Love—had penetrated the brotherhood, and was secured to all the ages that should follow. The father of the beloved disciple was a well-to-do Galilean fisherman named Zebedee, able to hire servants and to live in some ease. John and James, his two

sons, probably received some education in their boyhood, and certainly from their mother, the pious Salome, they must early and all through life have gained the chiefest impulse of all education, a desire to live closely with God.

#### THE YOUNG FISHERMEN AND THE HERMIT IN THE WILDERNESS

They were strong, healthy, thoughtful youths, they understood the seaman's life of their day and country; they could face hardship, and were inured to danger, they earned their living as fishermen, but did not think that living ended there, they were conscious of God and the mystery of life.

So far as we can gather, John was sufficiently reflective to feel that the priests of his religion were far from the secret mystery of the human heart. It seems that early in his life he went to hear the extraordinary preaching of the hermit of the Jordan, who cried aloud for repentance, and who baptised his converts into a new and deeper form of life. It is easy to imagine how John and James talked together in their ship about the mystery of life and the problems of their nation.

We can see how the preaching of John the Baptist, with its reality, its fierce passion, and its splendid vigour, must have appealed to these young men. Perhaps the refined disposition of John felt that there was some difficulty about following the Baptist, but his hunger and thirst after reality in the spiritual life made him at last a disciple of this new prophet. Many men follow a leader in whom they do not see all they desire to see, because they can find no higher, and are themselves incapable of leading men.

#### JESUS CALLS JOHN TO HIMSELF AND TEACHES HIM THE SECRET OF LIFE

It was while John, the fisherman, was listening to John the Baptist at Bethany that Jesus found him, and called this son of Zebedee to follow Him. The first step had been made when John sought the Baptist rather than the rabbis; the second step was when he left the thunders of the Baptist for the love of Jesus. Henceforth the road was clear before his eyes. The secret of life was discovered. Instead of thinking about sin, and wrath, and judgment, he thought of love. He saw that the heart is at rest when it answers the

Gospel according to John which shows us how intimately and with what perfect insight the beloved disciple understood the heart of his Master.

Mark was a man who observed. John was a man who perceived. In the Gospel according to Mark—the earliest, the simplest, the most picturesque, and in some ways the most useful of all our documents—we have a wonderful *narrative*, written by a man who saw the value of small details, had an eye for the picturesque, and stated all the essential things he said and saw.

#### THE WRITINGS OF JOHN THAT REVEAL TO US THE SECRET OF THE MASTER

In the Gospel according to John we have the document of a man who perceived the meaning, the inner significance, the spiritual mystery of all that he saw and all that he heard.

If we read the good tidings according to John, we shall see how the writer had entered into the secret of his Master. It is the Gospel of love. "These things have I spoken unto you," he heard Jesus say, "that My joy might remain in you, and that your joy might be full. This is My commandment, That ye love one another, as I have loved you. Greater love hath no man than this, that a man lay down his life for his friends. Ye are My friends, if ye do whatsoever I command you." And again "A new commandment I give unto you, That ye love one another, as I have loved you, that ye also love one another. By this shall all men know that ye are My disciples, if ye have love one to another."

#### JOHN'S VISION OF JESUS AS THE LIGHT OF THE WORLD

And how wonderful and illuminating is this record by John of our Saviour's words: "I am come a light into the world, that whosoever believeth in Me should not abide in darkness. And if any man hear My words, and believe not, I judge him not, for I came not to judge the world, but to save the world."

No other disciple perceived so surely as John that without the idea of Jesus, that is to say the Fatherhood of God, the Brotherhood of Man, and Love as the laws of the universe, life was a darkness. John saw, as no other saw, that Christ was a Light, John felt, as no other felt, that this Light was warm and gladdening, and full of comfort. Among the friends who walked

with Jesus in Palestine almost every character of humanity is represented, and through them every conceivable idea of Jesus has been presented to the world. But it is to the beloved disciple that we owe chiefly the true, and therefore the most victorious, idea of Jesus, namely, the Jesus of Love—the Love given to make men happy, the Light shining that men might no longer walk in the darkness.

Because John loved, he was beloved, and because he loved, he understood. We can never understand any person deeply and satisfactorily unless we love. John loved Christ, and he understood the spiritual mystery of his Master's teaching. Through him has shone down the ages the pure light of the love and mercy of Jesus.

We know little of his long life. It is certain that he remained at Jerusalem for some time after the Resurrection. We also know that he was put in prison, and that he was sent as a missionary.

#### THE LAST MAN ON THE EARTH WHO HAD SEEN AND KNOWN JESUS

It is thought that he presently retired to Ephesus, and it seems that many people flocked to him for instruction. There was some idea, apparently, that he would never die, that Jesus would come again with power and great glory before death touched the disciple of love, and therefore John must have been eagerly sought by those who believed in Jesus.

He lived to be an old man, outliving, we imagine, all his companions, and remained for many years on earth, the last man who had known Jesus of Nazareth.

Legends of many kinds sprang up around his memory. We are not interested in those stories. If he was miraculously delivered from torture and death, it makes no difference to our ideas concerning him. What interests us, and holds all our wonder and affection, is that this fisherman alone among the twelve penetrated to the secret of Jesus, and that through him we have received the idea of Love. He was beloved by Jesus, he has been beloved by Christians all over the world for nearly two thousand years, he will always be loved by those who possess the secret—God is Love. All is there.

The next Bible Stories are on page 519.

the years that were to come, many a love-letter passed from one house to the other. Of the girls, Beth was the shyest and most retiring, a real home-bird, but her sweet and gentle nature had considerable influence upon her sisters. If there was a touch of vanity in any of them, Amy, the youngest, had it, but for all that she was as bright and lovable as any. While Beth stayed at home and helped in the housework, with their old servant Hannah, Amy went to school.

**WHY AMY WAS TAKEN AWAY FROM SCHOOL, AND HER MOTHER'S ADVICE**

Now, the children of New England in those days had a fondness for pickled limes, and were apt to bring these for eating in school hours which was a great offence—and Amy greatly offended. The teacher punished her so severely for this that her mother took her away from his school, as she did not like his way of teaching.

"That's good! I wish all the girls would leave, and spoil his old school. It's perfectly maddening to think of those lovely limes," sighed Amy, with the air of a martyr.

"I'm not sorry you lost them, for you broke the rules and deserved some punishment for disobedience, although I should not have chosen that way of mending a fault," was the mother's severe reply, which rather astonished the young lady, who expected nothing but sympathy. "You are getting to be rather conceited, my dear, and it is quite time you set about correcting it. You have many little gifts and virtues, but the great charm of all power is modesty."

"So it is!" cried Laurie, who was playing chess in a corner with Jo.

**MEG GOES TO TOWN AND HAS A TASTE OF FASHIONABLE LIFE**

It was not long after this that Meg received an invitation to visit her old school friend, Annie Moffat, and as the Moffats were wealthy people who enjoyed the "fashionable life" of the great city where their home was, there was a great deal of preparing for Meg's two weeks with them. As each of her sisters helped to fit her out, and her own good looks made even the simplest clothes seem dainty, Meg cut quite a figure at the Moffats' parties.

Laurie had also received an invitation to one of these parties, and Meg behaved rather badly to him, perhaps because

she found herself the centre of so much interest among the Moffats' friends; perhaps, also, because she heard it whispered there that Mrs. March was trying to make a match between her and Laurie. When she "fessed" this at home on her return, Jo and her mother were indignant.

"Well, if that isn't the greatest rubbish I've ever heard!" cried Jo. "Just wait till I see Annie Moffat, and I'll show you how to settle such ridiculous stuff. The idea of having 'plans' and being kind to Laurie, because he's rich, and may marry us by-and-by!"

"But, mother, do you have 'plans,' as Mrs. Moffat said?" asked Meg.

"Yes, my dear, I have a great many, all mothers do, but perhaps mine differ from Mrs. Moffat's. I want my daughters to be beautiful, accomplished, and good, to be admired, loved, and respected, to have a happy youth, to be well and wisely married, and to lead useful, pleasant lives, with as little care and sorrow to try them as God sees fit to send."

**A GOOD MOTHER'S PLANS FOR HER DAUGHTERS' FUTURE HAPPINESS**

"To be loved and chosen by a good man is the best and sweetest thing which can happen to a woman. But I'd rather see you poor men's wives, if you were happy, than queens on thrones, without self-respect and peace."

Meg's little journey into Vanity Fair, represented by this fortnight amid the fashionable life of the city, had not been without its use in showing her the silliness of the gossip people talked in "fashionable circles," and only made her love her simple home-life more.

Time slipped away in this pleasant companionship, and the girls grew into young women for whom the good fortune their mother had wished was perhaps near at hand. Jo's amateur contributions to "The Pickwick Portfolio" had made her ambitious of appearing in real journals, and when one day she had news that two of her stories were accepted, her delight knew no bounds. Laurie was as proud when he heard of it as if he had written the stories himself. And it was he who then let her into a secret when he said he more than suspected Mr. Brooke, his tutor, was in love with Meg, for he had

her own disappointment, and worked loyally in helping Amy to prepare for her long journey

Now, all this time Laurie had been such friends with all the girls that, when Jo had spoken of the possibility of his "marrying us," she meant that there was none of them he seemed to care for more than the others

#### WHY JO WENT AWAY, AND SOMETHING ABOUT A PROFESSOR

But of late she had felt that this friendship for herself was deepening into love, and she made up her mind that that was not to be, as she half suspected Beth was in love with him. And that was why Jo suddenly betook herself to New York as a teacher

Before long she was writing home about the good and gentle Professor Bhaer, from whom she was receiving tuition in German. It was clear that the professor was very much in Jo's thoughts. That was one of the reasons, but not the only one, for her declining to be the wife of Laurie when that dearest friend, who had now graduated with honours from his college put the tender question to her one summer day at home

Old Mr Laurence now determined on a visit to Europe, and Laurie went away with him. In Laurie's travels he met Amy in the south of France, and was filled with pleasure to find how beautiful she had grown in womanliness. He had thought that Jo's refusal of him would leave him with a wounded heart for years, but somehow in the presence of Amy the wound seemed quickly to heal

#### LAURIE AND AMY, AND A PRETTY SCENE ON THE LAKE OF GENEVA

Before long he discovered, to his own surprise, that Amy was the sister whom he loved. One day, when they were rowing on the Lake of Geneva, whither he had followed her, Amy took an oar, and together they kept time as the boat went smoothly through the water. Neither of them spoke for a little

"How well we pull together, don't we?" said Amy, who objected to silence just then

"So well that I wish we might always pull in the same boat. Will you, Amy?"—very tenderly

"Yes, Laurie," she answered, very low. Then they both stopped rowing,

and unconsciously added a pretty little picture of human love and happiness to the dissolving views reflected in the lake.

Meanwhile, away at the old home in New England Jo was very lonely, but she worked hard at her writing, and busied herself in household affairs to help the slow months along. Then one day came a new burst of happiness, when Laurie and Amy arrived—already married! Jo and Laurie were really better friends than ever, for the unselfish elder sister found a new joy in Amy's happiness. But Professor Bhaer was becoming quite a frequent visitor at the home, and it was noticed that Jo had a habit of blushing when he entered, or even when his name was mentioned

This being so, in due course it was no great surprise to all who were interested to know that the good professor had seized an opportunity one rainy day, when he and Jo had to share the same umbrella, to ask her if she loved him well enough to have him for her husband, whose heart was full of love even if his hands were empty. And, putting her hand in his, for she dearly loved a jest, she answered: "Not empty now," and kissed the professor under the umbrella

#### THE HAPPY DAYS FOR ALL AT THE HOME OF "MOTHER BHAER"

It was more than a year afterwards that Aunt March died and left Jo her country house. This gave her and her sweetheart the happy idea of founding a boys' school, where she was to reign over a regiment of boys as "Mother Bhaer." It never was a fashionable school, and the professor did not lay up a fortune; but it was just what Jo intended it to be—"a happy, home-like place for boys who needed teaching, care, and kindness." And in the years that followed, during many a happy holiday, the sisters, with their husbands and their children and Mr and Mrs. March, the happiest of grandparents, gathered there in loving companionship to talk over the days that had been, recalling the tender memories of their own childhood. On these occasions a toast that was always honoured was "Aunt March, God bless her!" For the professor could never forget how much happiness he owed to that crotchety old lady with the kind heart

The next Famous Books are on page 5137

better specimen, we can always put it in the place of the one we already have. In putting these coins aside as a beginning of our collection, we shall notice something curious about the King Edward farthing. When it is new it is quite black, and altogether a different colour from the other bronze coins. This is

to prevent rogues passing off the new farthings in the place of half-sovereigns, as was sometimes done in the days when the new farthings were bright. To get the present black appearance they are baked. Of course, the blackness wears off in use, and the worn farthings become like worn pennies or halpennies. Having

put aside the nine bronze coins, that we wrongly call "coppers," which are now in general circulation, we must be on the lookout for older coins. Sometimes we come across pennies of William IV, George IV,

and George III. There are a few that get into circulation from time to time, and we should be on the watch for them. The earliest farthings of Queen Victoria, too, should be looked out for. They were of copper instead of bronze, and the coins were rather larger and thicker than those now in use. We should tell our friends that

we are making a collection of coins, and ask them, if they come across any of that older money, not to spend it, but to keep it by, and exchange it with us for more modern coins. Now and again we can

purchase old coins on stalls in London and provincial market-places. Among all kinds of odds and ends, metal teapots, pieces of necklaces, and the like, the stall-keeper sometimes has a pile of coins, and for a few pence it is often possible to buy a copper, or even a small silver, coin of an earlier reign.

If coin-collecting becomes our favourite hobby, then there are, of course, dealers whose business it is to sell coins of all kinds to collectors, and we can consult their catalogues and make a selection suitable to the dimensions of our pocket-money.

On the copper coinage of William IV the

king is given his Latin name of Gulielmus III, and underneath the figure of Britannia on the reverse side will be seen the rose, thistle, and shamrock. In the coinage of George IV he has his Latin name of Georgius, and while on the pennies and halpennies the four is given as IV, on the farthings it is IIII. The

pennies and halpennies have on the reverse side, in the earliest coinage of the reign, an Irish harp crowned, but the farthings have Britannia with a lion lying at her feet. The later coinage of the reign has Britannia in all three cases, but without the lion at her feet. In the reign of George III the copper coinage included a very large twopenny-piece,

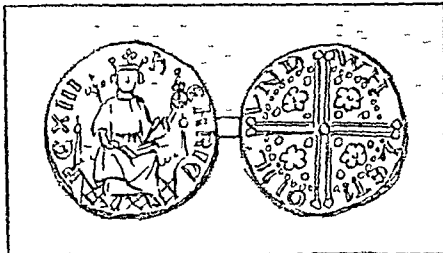
that looks something like a two-ounce weight, for it has, in common with the penny of this reign, a broad, raised rim all round. Special copper coins were struck for the Isle of Man. Farther back than this, of course, the coins

become rarer, and, if purchased, will be more expensive. An interesting thing we shall notice in comparing the portrait side of the coins of different reigns is that the direction in which the face looks is changed with each new ruler—that is, King Edward looks to the right, Queen Victoria looks to the left, William IV looks to the

right, and so on. Of course, we have only spoken of bronze and copper coins, but we may be able to afford to collect silver coins, too, especially the smaller ones. A very interesting coin to have is a groat, or four-

penny-piece. That of Queen Victoria has a portrait on one side, and on the other side Britannia seated. This coin is not now in general circulation, but from time to time one is received in change by mistake for a threepenny-bit. All this may seem a small beginning for a collection of coins, but some of the most valuable collections in existence

were started in this way, by boys who had very little pocket-money to spend. The coins should be kept in some sort of a cabinet, and each coin should be separately wrapped up in white tissue paper to preserve it well.



This penny of Henry III is worth £250. The coin is of gold, and both sides of it are shown.



Not often have British coins borne both the king's and the queen's heads. The left-hand picture is a William and Mary halfpenny, and the right-hand coin is a Mary II and Philip shilling.



On the left is a King Alfred penny, now worth £22, and on the right a Cromwell farthing, worth £21.



## KEEPING TORTOISES AS PETS

A TORTOISE needs less attention than any other pet that we can choose. Indeed, during the winter a tortoise needs no attention at all, for it goes away into a corner of the garden and sleeps until the coming of spring.

Tortoises can be bought for about a shilling each, and the best way to keep them is simply to put them in the garden and let them look after themselves. They may go out of sight for days, or even weeks, and we may think them lost, but they will generally turn up again.

It is supposed that tortoises are very stupid creatures, but they have been known to walk out of a flower-bed at the call of their owner, and although this is about the limit of their intelligence, it proves that they are responsive in some measure to attentions paid to them.

When we take a tortoise into the house, especially if it be hungry, we shall find no difficulty in persuading it to eat green food, such as lettuce and cabbage, and it may even be tempted to take some bread and milk.

## SOLUTION OF THE GUARD'S PUZZLE ON PAGE 4997

THE guard at the king's hunting lodge was able so to arrange its numbers every night that there were always 9 soldiers on each side of the king's chamber. On the first night, when 4 soldiers went to the village, leaving only 20 behind, these disposed themselves as in the first diagram.

4	1	4
1		1
4	1	4

2	5	2
5		5
2	5	2

1	7	1
7		7
1	7	1

	9	
9		9
	9	

5		4
1		5

that 9, and only 9, should appear on each side of the house. They did so in the manner shown in the third diagram. On the fourth night, when 12 friends visited the lodge, the men distributed themselves as in the fourth diagram. Finally, on the fifth night, when 6 of the soldiers went to the village,

On the second night, when 4 friends of the troopers came to the lodge, and there were thus 28 instead of 24 men present, they were distributed as in the second diagram. The third night 8 visitors entered the lodge, and these, with the 24 soldiers, made a total of 32 men to be arranged, so

leaving only 18 of their number behind, these 18 arranged themselves as shown in the fifth diagram. It will be seen that in every case, whether there were fewer or more than their correct number present, they were always able to arrange matters so that the king's order of nine men on each side was obeyed.

## SOLUTIONS OF THE PUZZLE PICTURES ON PAGE 4999

ON page 4999 are ten sets of puzzle pictures, each set representing the name of a well-known plant. By putting together the names of the various objects that are shown in the pictures, we can discover what are the plants

represented by the artist. The correct answers to the puzzles are as follows: 1, Cabbage, 2, Cauliflower, 3, Larkspur, 4, Apricot, 5, Orchids, 6, Hollyhocks, 7, Box, 8, Foxgloves, 9, Heartsease, 10, Gooseberries.

## SOLUTIONS OF THE ANAGRAMS ON PAGE 5002

AT the end of page 5002, which gives a description of what an anagram is, and tells how anagrams may be formed, a number of words and phrases are given from which good anagrams can be made. The following are the solutions of these anagram puzzles, although it must be distinctly understood that these are not necessarily the only solutions. Catalogues will give Got as a clue, Christianity gives I cry that I sm, from Crocodile we get Cool'd rice, and from Lawyers Sly ware Melodrama provides Made moral, and from Midshipman comes Mind his map, Parishoners will give I hire parsons, Presbyterian gives I best in prayer, and from Soldiers we have Lo! I dress.

Some words are given on page 5002 in which the article before them is to be used in the anagram. The calceolaria gives Eat coal, Charlie, The nightingale will make High gale in tent, and from The turtle-dove we get I.e., let truth do. The phrase Is pity love? provides, in reply to the question,

the anagram. Positively, and from Poor house we have O sour hope, which most will agree is a very appropriate anagram according to the popular idea of the poor house.

The following is the list of names given on page 5002, with its anagram after each: John Abernethy, Johnny the bear, Thomas Carlyle, Cry shame to all, Charles James Stuart, Charles, a just master, Henry Wadsworth Longfellow, Won half the New World's glory, Alfred Tennyson—Poet Laureate, Neat sonnet or deep tearful lay, Sir Robert Peel, Terrible prose, William Shakespeare, I ask me has Will a peer, Robert Southey, Robust hero yet, George Thompson, O go! the negro's M.P. Thomas Carlyle gives several other anagrams in addition to the one mentioned above. We have from the letters composing the great thinker's name the following: Mercy, Lash a lot, A lot cry "Lash me", A calm, holy rest, Clearly to sham. The examples given will show that the mental exercise obtained in thinking out anagrams is by no means trifling.

THE NEXT THINGS TO MAKE AND THINGS TO DO ARE ON PAGE 5195

# WHERE THE WORLD'S SUGAR COMES FROM

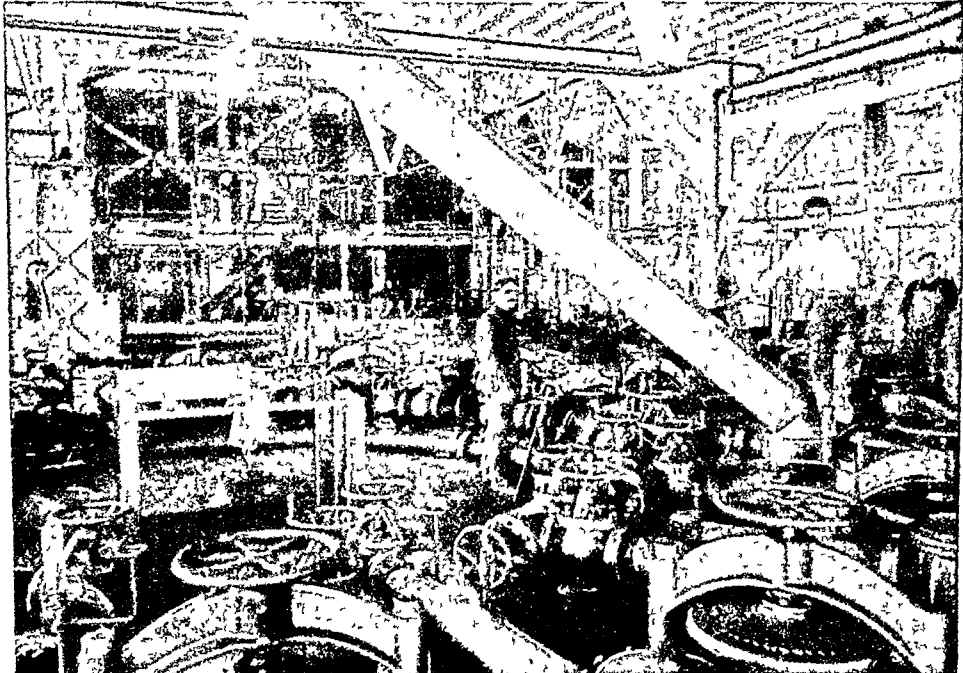


Here we see the different sources from which the world obtains its sugar. In the circle at the top a man in India is seen climbing a tree to get the juice of the date-palm, which holds sugar. The two pictures at the bottom show the scene in a Canadian maple forest during the season for collecting the maple-juice, and a scene by the fire at which the maple juice is being boiled down. In the centre are the various kinds of sugar-cane, which grow in hot countries, and at the bottom, on the left, are examples of beet from which sugar is made. The leaves and the root of the beet are both shown. The long thin sugar-cane in the centre is the common sugar-cane, which was at one time the only source of sugar.

# MILLIONS OF BEETS IN A SUGAR FACTORY

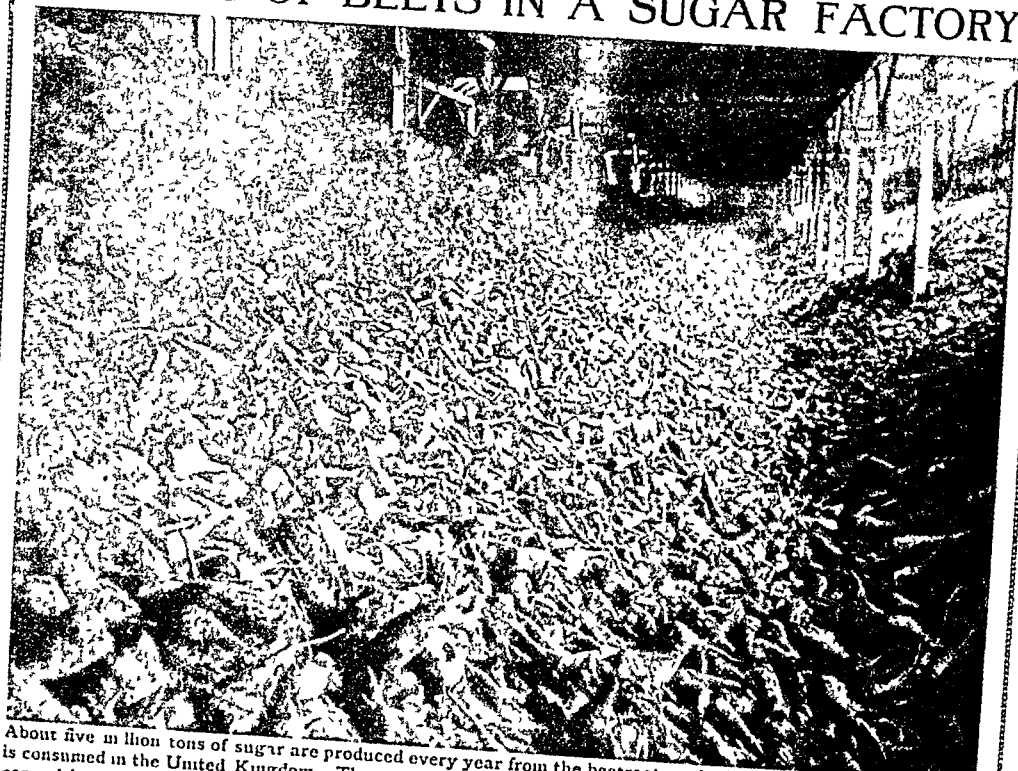


About five million tons of sugar are produced every year from the beetroot, and of this quantity nearly a fifth is consumed in the United Kingdom. This picture shows millions of beets in the storage sheds, waiting to be carried by little water-channels to the washing-drums. The beets roll down automatically into the channels

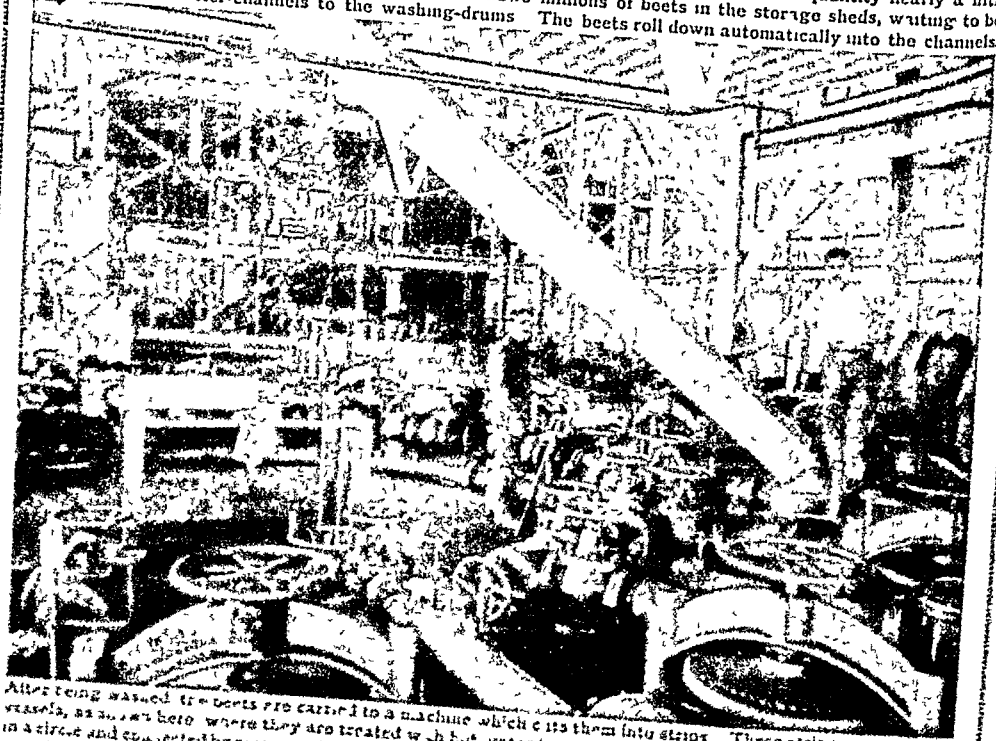


After being washed, the beets are carried to a machine which cuts them into strips. These strips are run into vessels, as shown here, where they are treated with hot water to extract the sugar. The vessels are arranged in a circle and connected by pipes, so that the water that washes out the sugar may flow through all the vessels

# MILLIONS OF BEETS IN A SUGAR FACTORY



About five million tons of sugar are produced every year from the beetroot, and of this quantity nearly a fifth is consumed in the United Kingdom. This picture shows millions of beets in the storage sheds, waiting to be carried by little water-channels to the washing-drums. The beets roll down automatically into the channels.



After being washed, the beets are carried to a machine which cuts them into strips. These strips are run into vessels, as shown here, where they are treated with hot water to extract the sugar. The vessels are arranged in a circle and connected by pipes, so that the water that washes out the sugar may flow through all the vessels.

# CATCHING THE JUICE OF THE MAPLE-TREE



In America a great deal of the sugar used comes from a tree called the sugar-maple. We do not use maple-sugar in England. A hole is first bored in the trunk



The sweet sap oozes from the tree, and little American boys are fond of inserting a small tube in the hole that has been bored and sucking the syrup from the tree.



The trees are tapped in time to catch the sap, which rises towards the end of the winter, and pails are hung on the trunks to receive the liquid. A single maple-tree yields from three to six pounds of sugar in a year. The photo of the trees on these pages are by Underwood & Underwood, London, the Keystone View Company, Wilson, and others.

# MAKING SUGAR FROM THE SUGAR-CANE



English people are the largest consumers of sugar in the world, and there is nothing we should miss from our tables more than sugar. A great deal of sugar still comes from the sugar-cane, which is here being cut



In this picture the sugar-cane that has been cut is being carted to the crushing-mills. This plantation is in the West Indies, and we see how oxen are used to draw the carts. Formerly all the sugar used came from the cane



This is an Egyptian market, where the sugar-cane is being sold just as it was cut. When the cane is crushed, it yields a greyish-green fluid, which is purified by heat.



The cane is here being crushed. The fluid that comes will be purified, and then heated till the sugar-crystals form. The crystals are then separated from the liquid

THE LAST PICTURE OF A BILAR THING IS ON PAGE 5218



taking of Ilium, or Troy, and the "Odyssey," which tells of the wonderful wanderings of the great hero, Odysseus.

Once people thought that everything in the "Iliad" and "Odyssey" was fairy-tale, because there is so much in them that can be nothing but beautiful make-believe. The spade of the explorer, however, has shown, within the last fifty years, how much truth and history lie hidden in Homer's songs. We know now that brilliant memories of times gone by are enshrined in the legends. Those times of which Homer sang had been wiped out by waves of newcomers and years of disturbance and struggle in the land.

#### THE PALACES OF THE GREEK HEROES THAT WERE HIDDEN FOR CENTURIES

In the north-west corner of Asia Minor, near the Hellespont, scholars believe they have found the ruins of Troy, or Ilium itself, and in Mycene, in the Peloponnesus, they have unearthed a palace with golden treasure, like the home of Agamemnon, the leader of the Achæans who fought against Troy. Grand indeed is it to have actual touch with those far-off stirring times, and most deeply interesting are the remains to be seen in museums of pictures cut in roller seals or painted on plaster, as well as wonderful treasures of gold, such as ornaments and cups.

How long this civilisation had lasted is not yet known, but on many Mediterranean sites have been found widespread traces of it. In the beautiful island of Crete, for instance, stood a marvellous palace three storeys high, as large as a town, belonging to times still earlier than those of Mycene and Troy. The story of its exploration is one of the most entrancing ever told, especially as it unravels one of the wonderful old Greek stories, that of the monster Minotaur, and the labyrinth, or palace with winding passages, in which he lived.

#### THE MEN WHO SETTLED ON A STRIP OF LAND AND BECAME DARING SAILORS

It was during the years when this old civilisation was flourishing round the Ægean Sea that many families of people were migrating westwards from their homes on the lower basin of the Euphrates, where life was so full and busy and there was constant need for more room. One of these families, known as the Phœnicians, settled, as Abraham of the same race had done

long before, in Syria, the country between Asia Minor and Egypt. These Phœnicians occupied a narrow strip of land about 200 miles long by about 20 broad, between the sea and the mountains of Syria, where grew the famous cedars of Lebanon. Energetic and clever people they were, and they became daring sailors and most successful traders. Placed midway between the East and West, they became the merchant carriers of the known world, the productions of the old empires on the Nile and the Euphrates passed through their hands, and were taken in their little ships wherever they could find a market.

Farther and farther afield they pushed their way, building forts to protect their trade, much as the Dutch, French, and British did thousands of years later. They were miners and metal-workers, too, and it was chiefly in the quest for silver that they passed the Pillars of Hercules and founded Gades, or Cadiz, facing the broad Atlantic. It was the rumour that tin was to be found in our own land that led them to pass the Bay of Biscay and land in Cornwall. The Phœnicians discovered Britain.

#### HOW THE PHŒNICIANS BECAME THE MERCHANTS OF THE WORLD

These people are mentioned in the "Iliad" as famous workers in metal, in the "Odyssey," they are spoken of chiefly as daring sailors and pirates.

Like the British in later days, they saw the advantages of Malta, and Cyprus, the copper island, for harbours and footholds, but their chief colony, which flourished exceedingly after the great days of Phœnicia had gone by, was Carthage, on the north coast of Africa, nearest to Sicily. So strong and rich did this colony become that it founded other colonies, such as New Carthage, in Spain, and contested long and nobly with the Greeks and Romans in later days.

And all the time that the Phœnicians were facing the waves in storm and sunshine, buying and selling everywhere, from the very old Greek cities and from Britain, and founding colonies, they were also making great wealth from a beautiful purple dye obtained from a little shell-fish gathered on their shores. It is astonishing indeed how much life and work had its home on that narrow strip of shore, especially round the two great cities Sidon and Tyre, both of which had

On other vases we can see how the potter made his pots, how the girls spun the soft hanging material of which they made their pretty, simple garments; how they gossiped together as girls do now, while bringing water from the well. There are many entertainment scenes, too, where the guests are reclining on couches.

The beautiful pictures of ships recall the blue Mediterranean and the naval glory of Greece, and the scene of olive-gatherers reminds us of the numbers of olive-trees round Athens, which gave the valuable oil so much sought after.

Some of the larger vases were prizes for sports and games, won long ago and buried with the proud winner when he died. Often, however, the prize in the games was simply a wreath of leaves, this surprised Xerxes very much. At Athens the prize was one of the vases with some of the precious olive oil in it.

#### HOW ATHENS ROSE IN GLORY FROM THE ASHES OF DESOLATION

And this leads us to the city of Athens, and its hill called the Acropolis, where the Persians destroyed the sacred buildings and slew the few hundred people who stayed behind when the rest fled to the ships. There is a blackened layer to be seen to-day when digging is done to a certain depth on the Acropolis—the relics of the ruin wrought by the Persians.

Soon after this war was ended, the Athenians, helped by three of their great men, Pericles the ruler, Ictinos the architect, and Phidias the sculptor, set to work with extraordinary energy to restore the mischief done by the enemy. It was a grand opportunity, such as Sir Christopher Wren had after the Fire of London, and by degrees temples, such as the world had never seen before, rose up on the Acropolis.

We have a model of this flat-topped hill of the city, as well as one of the most wonderful of the temples upon it, in the British Museum, together with many of the sculptures and adornments of the Parthenon. This building for 1,000 years remained a temple of the goddess Athena Parthenos, and that is how it received the name of the Parthenon. For another 1,000 years it was used as a Christian church, and then as a Turkish mosque. Now it is one of the grandest ruins of the world, and the sculptures are studied by all who wish to

understand the most beautiful ways of expressing the human form. As we gaze in wonder and admiration at the glorious figures of the gods and goddesses, we reflect what models Phidias must have had before his eyes.

#### THE WONDERFUL TREASURES OF ANCIENT GREECE THAT WE CAN SEE TO-DAY

The various details of the frieze which runs round the outside of the temple give a glowing picture of the grand procession in which all Athens took part in the centuries of its greatness. The winners of the vases were there, as well as the gentle, modest maidens who had embroidered a beautiful robe for the goddess. There were, also, the splendid prancing horses, the musicians, the bearers of offerings, and the gentle animals for sacrifice.

There were three statues of Athena on the Acropolis—a little old wooden one, supposed to have fallen from heaven, an enormous bronze one, seventy feet high, that the sailors could see and salute at sea, five miles off, and a gorgeous gold and ivory one, forty feet high, in the Parthenon, which is shown on page 5125. Then there was the equally large statue of Athena's father, Zeus, in the temple at Olympia in the Peloponnesus. It was at Olympia that the great national games were held, the prizes in which were so eagerly competed for.

The British Museum has remains of many other temples and sculptures, besides relics of bronze, and the exquisitely fine portraits on the coins and engraved gems. The work on the gems and the jewellery of the most notable period is so wonderful that its beauty is seen fully only by the aid of a magnifying glass.

#### WHERE WE CAN SEE THE TOYS OF THE CHILDREN OF ANCIENT GREECE

But perhaps the collection that makes us feel like intimate friends with the Athenians is that of the little figures in terra-cotta, called after the place where many were found, the Tanagra figures. Such pretty and graceful girls in life-like attitudes, playing games, reading, chatting, skipping, all so natural and homelike, we can scarcely realise they lived more than 2,000 years ago, and spoke Greek, not English. Anyway, we feel we could understand one of the babies when he wakes in the arms of his good-natured-looking nurse. He must have had toys to play with, like those



belong to him wishes that none the less or none the more because he can write. If a man cannot write he may pick a pocket; if he *can* write he may forge a cheque; but in either case he is a thief—he wishes to steal. He will steal in a different way in the two cases, but stealing is stealing, and in both cases his theft is decided by feelings that he has, and feelings that he has not—emotions of desire for gold, without emotions of self-respect, or of consideration for the person who loses the gold, and perhaps without emotions of fear that he may be found out.

The truth is that reason and knowledge are pilots. The pilot is a guide, but the pilot does not decide where the ship is to go—something else does that. Perhaps it is a gale of wind; perhaps, if the ship is a human being, it is a gust of passion. The pilot is not the dictator; something else is the dictator, and calls in the pilot in order to gain its end, as when a thief wants money and calls in his knowledge of forcing locks, or of forging, or of cheating at cards, in order to gain his end. As a rule, what we want is happiness, perhaps by serving ourselves, perhaps by serving other people. Reason and knowledge do not make us desire happiness, but they tell us how we may best achieve it.

#### A COMMON MISTAKE THAT AFFECTS EVERYTHING WE DO

The common mistake that is made in this matter leads us to think that we have only to teach people, and they will act reasonably or rationally. It is often declared that man is a rational animal, meaning that he has a reason. It is true that man has a reason, but if he had nothing else he would never do anything; he would never make a movement but to breathe. The mistake is so serious because it affects everything we do in the way of education.

As a rule, we show little interest in the feelings or emotions of boys and girls, though these are the mainsprings of all human action; but we spend all our time in trying to develop the intellect, as if to know the right were to follow it. We teach a boy not to steal, and his intellect perfectly understands what we mean; yet he may steal and we are surprised and disappointed. That is because we have not first taught ourselves how human nature is made.

What we need to-day, and what is always needed, is men of good will; and the great business of real education and the real bringing up of children is to try to make them into men and women of good will. That is what we mean when we talk about training character, and the importance of character-making is that character, and not intellect, makes our conduct.

#### THE GREAT PART PLAYED BY FEAR IN THE HISTORY OF THE WORLD

When we come to study our emotions, or feelings in that sense of the word, we find that they correspond exactly to what are commonly called instincts. This has lately been proved by an English student of the mind, and is indeed a very important discovery. For instance, everyone knows that there is such a thing as the instinct of flight, and we know quite well that flight has something to do with being afraid.

This emotion of fear is one of the great emotions that decide the deeds of men and women and children in all places and ages. We may fear for ourselves, or for others, we may fear for this world, or for the hereafter. But in any case this is one of the great emotions that make history. Fear especially acts by preventing actions; it is the great controlling emotion which keeps people from doing things, and it has always been used by masters and governors of all kinds as the instrument by which they prevented people from doing what they did not want them to do.

Another important emotion is the emotion of disgust, which is not the same as fear, and that goes with the instinct which may be called the instinct of repulsion, which makes us shrink from slimy things in our food.

#### THE FEELING OF WONDER WHICH WE SHOULD NEVER LET DIE

Vastly more important is the instinct of curiosity, which goes with the emotion of wonder. Curiosity has become very marked among the higher animals, and it is stronger among the monkeys and apes than among any other creature except ourselves. This emotion of wonder is very powerful in human life. But it is not really very common in grown-up people in any strong form. Practically all children have it, and perhaps it often leads

worker-bee cares for the young bees ought to be remembered. We do not know how old the bee societies are. But, at any rate, some fishes watch over their eggs, and drive away enemies which might destroy them. From this stage onwards in the history of animal evolution the protection of the young by the parents comes more and more to depend upon the parent's feelings and behaviour, and the young need parental tenderness for a longer and longer period.

At last we reach the highest stage, where comparatively few young beings are born, but they are so well taken care of that most of them grow up. In such cases, says one authority, "the protection and cherishing of the young is the constant and all-absorbing occupation of the mother, to which she devotes all her energies, and in the course of which she will at any time undergo privation, pain, and death. The instinct becomes more powerful than any other, and can over-ride any other, even fear itself, for it works directly in the service of the race, while the other instincts work primarily in the service of the individual life, for which Nature cares little."

#### THE WONDERFUL LOVE OF A MONKEY AT THE ZOO

If we study this noblest of instincts among animals, it is the monkeys, and especially the apes, that show us it in the highest degree. There may be seen at the Zoological Gardens, at the time when this is being written, a monkey, lower than an ape, who has held one arm round her baby without one second's interruption, asleep or awake, ever since its birth several months ago.

No one can question for a moment that this instinct goes with the emotion of love or tenderness. We can see it in our domestic cats, and it may often be noticed among birds. During sixteen hours of a summer day, a pair of tits, father and mother, carried without interruption two thousand separate morsels of food to their young ones. Only a powerful feeling could enable them to continue such a work. It is now agreed by careful students that this feeling is special and peculiar, and not a mixture of any other feeling; it is the feeling which the human mother has when she looks at her helpless baby. But, as is the case with the other instincts of human beings, it may take

various other forms, as we shall see. It is a very striking fact that only in recent years has the existence and the importance of this feeling been recognised, and great thinkers in the past have actually declared that all the good and tender feelings that are experienced by human beings were obtained through education. On the contrary, they exist in our nature, and this is their root.

#### THE STRENGTH OF THE LOVE OF PARENTS FOR THEIR CHILDREN

It is true that among many savage peoples, and even among some civilised races, such as the Chinese, little babies, and especially girl babies, are killed, and some have supposed this to mean that there was no feeling of love for babies among such peoples. This is not the case. The reason why the babies are killed is in order that there shall be room for those who live, and when this terrible thing is done, the rule is that it is done in the first few hours. If a baby survives a day or two, its life is safe, because already it has called out the love and tenderness of its parents.

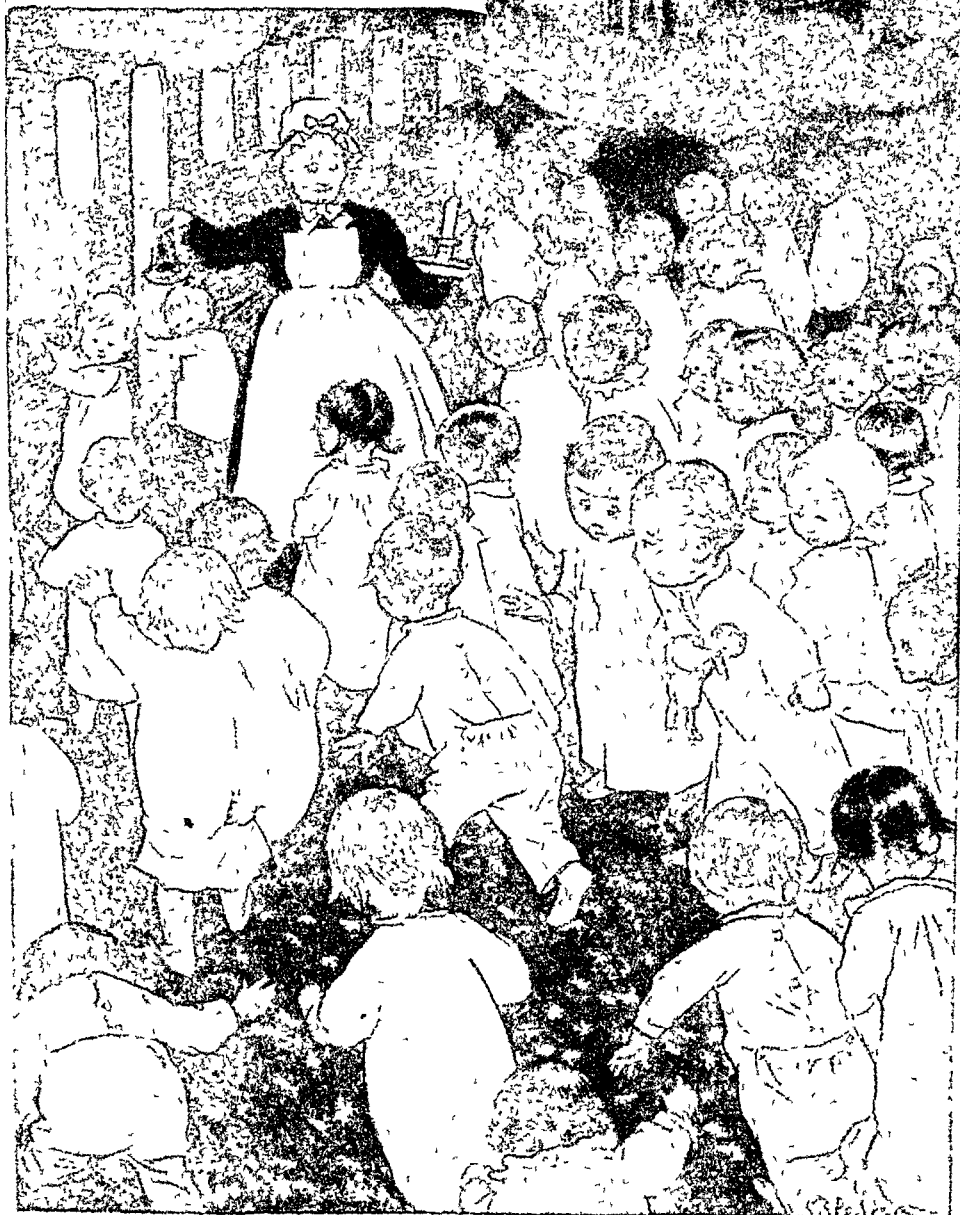
The feeling of parents for their young is far stronger than the feeling of children for their parents—a proof of the fact that this feeling is not gratitude or expectation of advantage, but genuinely unselfish. If, as was once asserted, parents cared for their children because they expected their children to care for them when they grew old, then children should care for their parents more than parents for their children. Yet we find that, though children owe everything to their parents, and though the parent's life may be perhaps a long period of pain and sacrifice and anxiety for the sake of the child, parental love is far stronger, because it is rooted in this great instinct, without which the race could not possibly go on.

#### THE LOVE FROM WHICH ALL OTHER GOOD THINGS SPRING

We see now that from this instinct, and the love which goes with it, spring all the good things in human nature—generosity, gratitude, pity, unselfishness, true love of our neighbours. When we seem to do good deeds for any other reason than the fact that this feeling is behind us, our deeds are not really good, but are done for the sake of some reward, or to avoid some punishment. The great fighting instinct, together

# ALL ABOARD THE SHUT-EYE TRAIN

Come, my little one with me!  
There are wondrous sights to see  
As the evening shadows fall  
In your pretty cap and gown,  
Don't detain  
The Shut-Eye train —  
"Ting-a-ling!" the bell it goeth,  
"Toot-toot!" the whistle bloweth,  
And we hear the warning call,  
"All aboard for Shut-Eye Town!"



Who count each burning life-drop's flow,  
Each falling tear of Love  
Though from the hero's bleeding breast  
Her pulses Freedom draw,  
Though the white lilies in her crest  
Sprang from that scarlet dew—  
While Valour's haughty champions wait  
Till all their scars are shown,  
Love walks unchallenged through the gate,  
To sit beside the throne!

### SUPPOSE THE LITTLE COWSLIP

We have published in our book many little poems by unknown writers, simply because they have long and deservedly been children's favourites, and on this ground we can scarcely deny a place to these simple and pleasing verses.

Suppose the little cowslip  
Should hang its golden cup,  
And say, "I'm such a tiny flower,  
I'd better not grow up!"  
How many a weary traveller  
Would miss its fragrant smell!  
How many a little child would grieve  
To lose it from the dell!  
Suppose the glistening dew-drop  
Upon the grass should say,  
"What can a little dew drop do?  
I'd better roll away!"  
The blade on which it rested,  
Before the day was done,  
Without a drop to moisten it  
Would wither in the sun!  
How many deeds of kindness  
A little child can do,  
Although it has but little strength,  
And little wisdom too!  
It wants a loving spirit  
Much more than strength, to prove  
How many things a child can do  
For others, by its love

### BONNIE JEAN

The tender feeling which breathes through every line of this most charming love lyric makes it a gem of its kind, and it ranks among the finest of Burns' many songs. The third and fourth verses we thought to have been written by another poet, but they are in perfect harmony with the opening verses.

O'er a' the airts the wind can blaw,  
I dearly love the West  
For there the bonnie lassie lves,  
The lassie I lo'e best  
There wily woods grow, and rivers flow,  
And moun a hill between,  
But, day and night, my fancy's flight  
Is ever wi' my Jean  
I see her in the dewy flowers,  
I see her sweet and fair,  
I hear her in the tunefu' birds,  
I hear her charm the air  
There's not a bonnie flower that springs  
By fountain, shaw, or green,  
There's not a bonnie bird that sings,  
But minds me o' my Jean  
O, blaw, ye weslin winds, blaw saft  
Among the kae trees,  
Wi' balmy gale, frae hill and dale,  
Bring hame the laden bees,  
And bring the lassie back to me  
That's aye sae neat and clean,  
Ae smile o' her wad banish care,  
Sae charming is my Jean  
What sighs and vows among the knowes  
Hae pass'd atween us twa!

How fond to meet—how wae to part,  
That night she gae'd awa'!  
The Powers aboon can only ken,  
To whom the heart is seen,  
That name can be sae dear to me  
As my sweet, lovely Jean

### THE SHUT-EYE TRAIN

At the very beginning of our book OF POETRY we made company with Eugene Field, and often on our long journey through the fair fields of poetry we have turned to his delightful children's verses for entertainment. We still find his poetry the quaintest and prettiest of its kind, and "The Shut-Eye Train" is quite as charming as any of the many pieces that have preceded it. The train and its little travellers are shown in the picture on page 5136.

Come, my little one, with me!  
There are wondrous sights to see  
As the evening shadows fall,  
In your pretty cap and gown,  
Don't detain  
The Shut-Eye train—  
"Ting-a-ling!" the bell it goeth,  
"Toot-toot!" the whistle bloweth,  
And we hear the warning call  
"All aboard for Shut-Eye Town!"  
Over hill and over plain  
Soon will speed the Shut-Eye train!  
I through the blue where bloom the stars,  
And the Mother Moon looks down,  
We'll away  
To land of Fay  
Oh, the sights that we shall see there!  
Come, my little one, with me there—  
'Tis a goodly train of cars—  
All aboard for Shut-Eye Town!  
Swifter than the wild bird's flight,  
Through the realms of fleecy night  
We shall speed and speed away!  
Let the Night with envy frown—  
What care we  
How wroth she be!  
To the Balow-land above us,  
To the Balow-folk who love us,  
Let us hasten while we may—  
All aboard for Shut-eye Town!  
Shut-Eye Town is passing fair,  
Golden dreams await us there,  
We shall dream those dreams, my dear,  
Till the Mother Moon goes down—  
See unfold  
Delights untold!  
And in those mysterious places  
We shall see beloved faces,  
And beloved voices hear  
In the grace of Shut-Eye Town  
Heavy are our eyes, my sweet,  
Weary are our little feet—  
Nestle closer up to me  
In your pretty cap and gown,  
Don't detain  
The Shut-Eye train!  
"Ting-a-ling!" the bell it goeth,  
"Toot-toot!" the whistle bloweth,  
Oh, the sights that we shall see!  
All aboard for Shut-Eye Town!

### DUTY AND POWER

This is an epigram by Emerson. An epigram is a thought expressed in a very few lines, so pithily that we are not likely to forget it, and it may be written either in prose or verse.

So nigh is grandeur to our dust,  
So near is God to man,  
When duty whispers low, "Thou must,"  
The youth replies, "I can."

# IN LONDON ONCE I LOST MY WAY

In London once I lost my way,  
In farming to and fro,  
And asked a little ragged boy  
The way that I should go  
He gave a nod and then a wink,  
And told me to get there,  
"Straight down the Crooked Lane,  
And all round the Square"  
I boxed his little saucy ears,  
And then away I strode;  
But since, I've found, that weary path  
Is quite a common road  
Utopia is a pleasant place,  
But how shall I get there?  
"Straight down the Crooked Lane  
And all round the Square"  
I've read about a Fairy Land,  
In some romantic tale,  
Where dwarfs, if good, are sure to  
thrive,  
And wicked giants foul.

My wish is great, my shoes are strong,  
But how shall I get there?  
"Straight down the Crooked Lane,  
And all round the Square"

I've heard about a pleasant land,  
Where omelettes grow on trees,  
And roasted pigs run, crying out,  
"Come, eat me, if you please!"  
My appetite is rather keen,  
But how shall I get there?  
"Straight down the Crooked Lane,  
And all round the Square"

They say there is a garden fair,  
That's haunted by the dove,  
Where love of gold doth ne'er eclipse  
The golden light of love.  
The place must be a paradise,  
But how shall I get there?  
"Straight down the Crooked Lane,  
And all round the Square."

## WHAT ARE LITTLE BOYS MADE OF?

What are lit-tle boys made of? What are lit-tle boys made of?  
Frogs and snails, and lit-tle dogs' tails, And that are lit-tle boys made of

## A NURSERY RHYME OF THE CHILDREN OF FRANCE

The French and English versions of this Rhyme are side by side

Sur le pont d'Avignon,  
L'on y danse, l'on y danse;  
Sur le pont d'Avignon,  
L'on y danse tout en rond  
Les beaux messieurs font comm' ça,  
Et puis encore comm' ça.  
Sur le pont d'Avignon,  
L'on y danse, l'on y danse;  
Sur le pont d'Avignon  
L'on y danse tout en rond  
Les belles dames font comm' ça  
Et puis encore comm' ça;  
Sur le pont d'Avignon  
Tout le monde y danse en rond!

On the bridge of Avignon,  
See them dance, see them dance!  
On the bridge of Avignon,  
They trip around, retire, advance  
Gallant swains bend low, like this,  
And once again do so, like this  
On the bridge of Avignon,  
See them dance, see them dance!  
On the bridge of Avignon,  
They trip around, retire, advance  
Fair ladies curtsy low, like this,  
And once again do so, like this  
See them dance, see them dance,  
On the bridge of Avignon

THE NEXT TENNIS AND NURSERY RHYMES ARE ON PAGE 529

Suddenly the old Indian, laying his ear to the ground and listening intently, exclaimed "The hoises of white men are coming!" Quickly taking cover, they had not long to wait before the cavalcade came into view. It consisted of a British officer, who wore the uniform of a major in the colonial service, and beside him rode two beautiful young women, one fair-haired and blue-eyed, and the other bewitchingly dark. They were accompanied by an Indian guide and a strange, gaunt creature of unkempt appearance. Hawk-eye's voice rang out in challenge as he presented himself to the little group, and it was with evident relief that the officer answered him.

"I am Major Duncan Heyward, and these ladies are the daughters of Colonel Munro, who is in command at Fort William Henry, whither we are bound. Unfortunately, our Indian guide has lost his way, and we should be glad if you could help us to regain it."

#### BETRAYED BY THE REDSKIN, AND A PERILOUS JOURNEY IN A CANOE

This was enough for the hunter to know that the Indian had betrayed the party. "An Indian lose his way!" he said, scornfully, as he made a sign to his own companions, who immediately slipped into the bushes to cut off the false guide. But with a wild shriek the guide bounded away, and succeeded in eluding them.

It was clear that the travellers had been betrayed, and no time was to be lost if they were to escape falling into the hands of the Iroquois, for the guide was known as a chief of the Hurons, a tribe of the Iroquois. Dusk was gathering, and there was no hope of reaching the fort that night, so Hawk-eye led the four strangers down to the river's edge, giving the horses over to his Indian companions, and from a place of concealment drew forth a frail birch-bark canoe, in which the travellers took their seats with no little difficulty, as it was overloaded with five persons. Only the marvellous skill of Hawk-eye and his calm steering through the surging water against the current saved them all from drowning. But it was their only hope of escape, and the four people sat in the canoe scarcely daring to breathe, while Hawk-eye coolly

impelled it forward by his dexterous and powerful strokes of the paddle. Meanwhile the two Mohicans led the hoises into the water and took them up-stream some considerable way to a little cove, where they would not be readily discovered. Thus, by walking the animals through the flowing water, no trail was left for the Iroquois to follow.

#### A STRANGE HIDING-PLACE UNDER A WATERFALL

It was black night when Hawk-eye at last brought the canoe with amazing skill into a little space of quiet water that lay alongside a rocky island over which the great waterfall descended like a mighty screen. Even when they had stepped on to the island, the travellers were still afraid to move, being in terror of the darkness and the deafening thunder of waters. There they stood, scarcely daring to exert a muscle, while the hunter shot away rapidly in his canoe to bring back the two Indians and a store of venison from their cache, or hiding-place. He seemed to be gone only a little while when he was back with his companions, and continued to make the travellers comfortable for the night.

Hawk-eye scarcely hoped that their hiding-place beneath the waterfall would escape discovery, and he had only chosen it the better to withstand an attack from the Redskins, which, sure enough, was made soon after dawn next day.

But the favourable position, and the cavernous nature of the island on which Hawk-eye had placed his party, together with his great skill as a shot, in which the two Mohicans were very little inferior, kept the savage Redskins at bay until another night had come.

#### CAPTURED BY THE HURONS, BUT RESCUED BY HAWK-EYE AND THE MOHICANS

The situation was now desperate. Their powder was done, and the next morning would see them all shot or captured. A little council of war was held. It was decided that the scout and the two Mohicans should slip into the water, reach the bank, and make their way to the fort in the darkness, returning at once with a rescue-party. All agreed that the Redskins would make captives of the others in the morning, and it was necessary that the rescue-party should be as strong as possible. Next morning the Hurons returned

was parleying with them when Uncas was brought in as a prisoner. Magua, arriving with his party of braves, was overjoyed to find his enemy at his mercy, and while some of the Hurons would have killed the young Mohican chief at once, Magua preferred keeping him alive to torture him later.

#### HOW THE MAJOR DISCOVERED HAWK-EYE INSIDE A BEAR-SKIN

In the commotion which the capture of Uncas had caused, Heyward and his supposed mission from Montcalm were for the time being forgotten, and the stranger in the camp was only recalled to their minds when an aged chief came forward to ask if the white brother had skill in magic. To this the major, with a little hesitation, not knowing whither he might be led by his reply, answered that he had.

Saying that an evil spirit had entered into the wife of one of his young men, the Indian then led the way to a cave in the mountain-side, some little distance from the camp, where a young woman lay, evidently very ill.

"Now let the white brother show his power," said the old Indian to the major. "I go. Brother, the woman is the wife of one of my bravest young men, deal justly by her. Peace," he added, beckoning to a large tame bear that had followed them into the cave, rolling and grunting, to be quiet. "I go."

The old Indian then left the supposed worker of magic in the cave, and he had no sooner gone than the animal, which Heyward took to be one of the tame bears sometimes kept in Indian villages, rose on its hind legs, and, lifting up its great, ungainly head, disclosed below the bronzed face of Hawk-eye, the scout!

#### THE SCOUT AND THE MAJOR OUTWIT THE INDIANS AND RESCUE ALICE

After his first moment of surprise, Heyward said to the scout, "Tell me the meaning of this masquerade. Why have you attempted so desperate an adventure?"

"The capture of Uncas is my reason for being here, and his own hot blood was the reason of his falling into the hands of the Hurons. By a stroke of luck I discovered an Indian conjurer, the owner of this bear-skin, who was preparing for the entertainment of the village in this guise, and, speedily securing him, I made free with his

finery, and am here to play his part, though not quite as he had intended. But let us hasten, for Alice is most likely hidden somewhere here," said Hawk-eye.

In an inner cave they were happy to discover the fair object of their search, and just at that moment Magua appeared at another entrance, only to be instantly disabled by the two white men, and bound and gagged. Quickly wrapping the girl in a blanket, Heyward took her in his arms, and, followed by the scout, who again imitated the walking of the bear, they appeared at the entrance of the outer cave, where were some of the relatives of the sick woman.

"Has my brother driven away the evil spirit?" demanded the old Indian. "What has he in his arms?"

"Thy child is better," returned Heyward gravely. "The disease has gone out of her, it is shut up in the rocks. I take the woman to a distance where I will strengthen her against any further attack. She shall be in the wigwam of her husband when the sun comes again."

#### THE HURONS DEMAND THE RETURN OF PRISONERS FROM THE DELAWARES

This speech satisfied the people, so, followed by the bear, Heyward, bearing Alice, passed boldly through the crowd and into the woods. When they had gone some distance, the scout urged Heyward to make with all haste for the camp of the Delawares and demand protection, as they were friendly Indians, but Hawk-eye would return to try to save young Uncas, in whose veins ran the last high blood of the Mohicans.

When the scout had reached the outskirts of the encampment again, he encountered Gamut, and disclosed his plans to him. Singing his loudest, Gamut led the way to the wigwam where Uncas was imprisoned, and told those who watched that he and the bear-conjurer were going to work a spell upon the captive. Believing that within the skin of the bear was the form of their own favourite magician, and that Gamut himself had supernatural power, the Indians made way for the two to enter. No time was lost now in making Uncas exchange places with Hawk-eye, while the scout changed his own clothes for those of the singing-master, whom they were to leave behind, knowing that the Indians would do him no harm. The ruse was successful, and thus

# CHARLES LINNÆUS AND CHARLES DARW



Linnaeus, the great Swedish scientist was the father of modern botany, for it was he who first arranged the world's plants in a scientific manner. It was in spite of the greatest difficulties that he followed his favourite study in his youth. In this picture we see Linnaeus as a young man, just returned from a long botanical ramble.



One of the most popular of Charles Darwin's books is his "Naturalist's Voyage Round the World," in which he tells of his experiences and discoveries when he travelled as official scientist with the warship Beagle. He thoroughly studied the geology of South America and found many fossils. Here we see him discovering a fossil mastodon that was exposed on a cliff near Santa Fé. This fossil was in too crumbling a state to be removed.



had a garden, which he stocked with common and uncommon plants, and here little Carl loved to study Nature. Flowers which had no meaning for others seemed to be an open book of knowledge for him, and many were the experiments he would try, by bringing in new wild flowers from the woods and planting them in his father's borders.

**C** H A R L E S L I N N Æ U S, THE POOR BOY WHO BECAME FAMOUS ALL OVER THE WORLD

In 1827 he was sent to Lund, and afterwards to Upsala University to study medicine, but he devoted himself mostly to the study of botany.

His love of Nature was discovered by a kind professor, through whose help Linnæus was sent on a scientific tour in Lapland. The book which he wrote, giving the result of his travels and investigations, brought him the friendship of a rich Dutch banker, who employed Linnæus to superintend his lovely garden. The naturalist delighted in this work. He classified all the plants and trees and shrubs, and, while so studying, wrote his first great work on the scheme of things in Nature as it seemed to him.

Afterwards he held various professorships; he lectured and practised as a doctor, he was honoured by his sovereign, and was able to buy himself a charming little estate, where he gathered together a wonderful collection of plant and animal life. This collection was afterwards bought for England. His days closed in peace and happiness in 1778, and he was beloved and greatly respected by the whole of Europe.

**T** H E B O O K B Y L I N N Æ U S THAT HELPED ANOTHER BOY TO WIN FAME

Linnæus was the founder of modern botany. He classified all plants and trees in scientific order. He did the same thing for the animal world. He thus laid the foundation of classification for the whole realm of Nature. His work has, of course, been greatly extended and developed, but it is his system which we have followed, and his scientific names which we employ, names which describe in Latin or Greek the nature and characteristics of the animal or plant to which a title has to be given. He it was who brought order out of chaos in Nature's great family. One of the first fruits of the labour of Linnæus was to win for natural

history the services of the great Leopold Christian Frédéric Dagobert Cuvier, whose literary title was "Georges Cuvier." He was born at Montbéliard, at that time belonging to Wurtemberg, in August, 1769, of French parents. Cuvier proved a diligent student, and assembled all the cleverest boys in his school, and formed what they called an academy of learning.

So deserving a boy was Cuvier that the Duke of Wurtemberg sent him to the Stuttgart University, where, to his intense joy, he was given a copy of one of the master works of Linnæus. From that time he devoted himself to the study of natural history. He had to serve for a short time, on growing up, in a Swiss regiment, but when he was eighteen years of age he entered the service of a family in Normandy as private tutor. Here he remained for six years, sheltered from the horrors of the Reign of Terror, and here great events followed a very simple thing.

**H** O W C U V I E R L E A R N E D T O R E A D T H E W O N D E R F U L B O O K O F T H E E A R T H

Some fossils were dug up near his home, and diligent study of these revealed to Cuvier wonders of the past of which no one else had dreamed.

Up to that time fossils, which had clearly at one time been animals, were regarded as freaks of Nature. It never occurred to men that these fossils had any relation to living things, or that their descendants were alive on the earth before their eyes. But Cuvier had got a clue, and he now entered upon a work from which he never turned back. He filled important public offices in France, and did much for the nation when given control of her educational system, but he is of most importance to us as the father of palæontology.

The word palæontology is made up of three Greek words—*palaios*, meaning ancient, *onta*, meaning beings, *logos*, meaning discourse. Hence the word means the science which treats of living things that inhabited the earth in ancient days. All the wonders of the past—of which we read on page 25 and succeeding pages—are revealed to us by the palæontologists, of whom Cuvier was the first. He was also a great comparative anatomist. By comparing the anatomy of various animals, he

born in Forfarshire in 1797, and at Oxford University became a good classical scholar. His parents wished him to follow the law, but though he did become a barrister, his heart was not in lawyers' laws, but in Nature's laws. At Oxford he had heard the lectures in geology of William Buckland, the famous scientist who, in his later years, became Dean of Westminster.

#### HOW LYELL BUILT UP THE STORY OF THE EARTH OUT OF THE ROCKS

Buckland afterwards took Lyell for a trip to Scotland to study geology, and after that the young man's heart was wholly given to science. Through Buckland he met Cuvier and Humboldt, and then friendship and counsel further inspired him. He gave up the law, and took entirely to the study of geology. He travelled all over England and Scotland, and in Europe and America. The outcome of his work was a great book on geology, which for the first time made clear the true story of the earth as we know it to-day.

Previous opinion had been that the form of the earth's surface, her great mountains, her deep valleys, her vast ocean-beds, had been caused by terrible disasters, that the world had been wrenched and twisted and distorted by earthquakes and volcanic eruptions. But Lyell showed that the causes which had made our world what it is are still in operation before our eyes to-day. He showed that, though a volcano may be created in a night, mountains *grow*, that the shrinkage of the earth, and the terrific pressure which it causes, make mountains rise out of flat rocks, that great folds in the solid rock are caused in the same manner, that frost and rain and wind wear down mountains, and cast their debris into the sea, to build up there, at the bottom of the water, land which will some day rise above the sea to form new continents when the existing ones disappear.

#### LEBIG, THE SHOPKEEPER'S SON WHO BECAME THE WORLD'S GREATEST CHEMIST

Buckland made Lyell a geologist. He was also the means of bringing to the help of British agriculture one of the greatest chemists of all time, in the person of Baron Liebig. Liebig was not born a baron, but was the son of a poor drysalter of Darmstadt, Germany, in which town Liebig was

born in May, 1803. He loved to try the experiments of which he read in old books, and, after many struggles for education, was befriended by the good-hearted Humboldt. Humboldt introduced Liebig to a rich friend who finished his education, and Liebig was enabled in time to become the greatest chemist and the greatest teacher of chemistry in Europe. He gave new life to chemistry, and trained men from all parts of the world. The thing that he did for England was in relation to agriculture.

In spite of the ordinary farmyard manure, our land was getting poorer and poorer, because the crops took so much out of the soil that could not be replaced. Liebig insisted on the use of artificial fertilisers, chemical substances containing the properties which the land requires.

Now, one day Buckland had noticed ladies wearing, as part of their jewellery, stones which, by their markings, he recognised as fossils. These ornaments were neither more nor less than food which, eaten millions of years ago by animals, had been converted in the earth into fossils. He discovered great stores of these coprolites, as he called them, buried deep in the earth.

#### THE BEGINNING OF A GREAT INDUSTRY, AND THE BIRTH OF A GREAT MAN

Liebig came to visit Lord Playfair, a great scientist and noble-hearted man, who, among other things, had translated Liebig's writings into English.

When Liebig was visiting Playfair, Buckland showed him his store of fossils. Playfair took away some of the fossils, had them ground up in his laboratory, and found that they abounded in phosphate of lime, the very thing the soil needed. This at once gave Liebig the idea of utilising ground bones for fertilising the soil, and then and there began the great artificial fertiliser industry in England upon which our agriculture so much depends.

While Liebig was at work enriching the soil, there was another great man, Sir Richard Owen, delving in it for more of its secrets. Owen was born at Lancaster, in 1804, and lived to be eighty-eight, and from early manhood to the last years of his life he was pouring out a flood of knowledge for us upon life in the ancient world,

change in animals or plants from the dawn of creation. Darwin is dead and gone, but his work will live for ever, and we may easily see the plan of his teaching from three simple things that he left among the specimens which he collected during his life-long studies.

**THREE THINGS LEFT BY DARWIN WHICH EXPLAIN THE PLAN OF HIS TEACHING**

First we notice a common Indian jungle fowl. That bird is descended from fowls like itself, but from that family of fowls have come all the multitude of domestic fowls that now exist. Next we have a common blue rock pigeon, which represents the parent stock from which are descended all our pigeons—homers, pouters, fan-tails, turbits, Jacobins, and the rest. The third is a common wild Chinese chrysanthemum. Wild chrysanthemums like this one are the parents of all the chrysanthemums in the world. And what has happened in regard to poultry, pigeons, and chrysanthemums has happened also in the case of thousands of other species in animal life and plant life, man himself being among the number to undergo the wonderful process of evolution.

Who was the man who taught this strange doctrine, and gave such a mass of knowledge to the world? Darwin is that man, and we read a charming story about him on page 4511. He was born at Shrewsbury, in February, 1809, and was the son of a doctor, who intended him for the Church. But he was a born naturalist, and when there came the chance of going for a five years' scientific cruise round the world in the ship *Beagle*, he earnestly begged his father's permission to go.

**WHAT THE WORLD OWES TO THE SHAPE OF A BOY'S NOSE**

His father thought that it would ruin his character to go; it was a mad scheme, he declared. Still, he said, if the young man could find one reasonable man to support him in his desire, then he would give his consent. Darwin found that one man, his uncle, a man in whose judgment the elder Darwin had great faith. The uncle was of opinion that the youth should go, for he had been impressed by the fact of his having a nose of peculiar shape. And, as Darwin used afterwards to say, his whole career depended

upon the shape of his nose, and we may add that the world owes to that little peculiarity the vast sum of knowledge which Darwin by this voyage was able to contribute. Upon such trifles do great events turn.

The tour round the world gave the careful and observant Darwin a rare opportunity for observation of all kinds of animal life under all sorts of conditions. We must all read for ourselves his delightful volume on the great voyage. When he came home he married happily, and settled down in a pretty old house at Downe, in Kent. There, year after year, he toiled away, arranging and describing the specimens which he had brought home, there he watched his poultry and pigeons and dogs, his fruit and bees and flowers, and all the time his great mind was slowly working its way toward the light with regard to the wonderful theory which we have been considering.

**HOW CHARLES DARWIN & ALFRED RUSSEL WALLACE THOUGHT THE SAME THING**

He was a slow worker, for his health was bad, and he was nervous about making a statement which might be challenged. Little by little he was building up his theory, and at various times he had shown some of his written conclusions to Lyell and others. What would have happened otherwise we do not know, but before his greatest book was published a very romantic thing occurred.

Dr. Alfred Russel Wallace, who was at the time exploring and studying in the Malay Archipelago, sent him a paper which he had written, showing that, all unknown to each other, the two men had been working in the same direction. They had both arrived, by separate paths, at the same conclusion. The most startling theory in the modern history of knowledge had come to two men at about the same time. Friends of Darwin to whom he showed Dr. Wallace's paper told him that he must at the same time produce with it his own studies which had been so long in preparation. The two papers were read at the same meeting of the Linnaean Society, and in 1859 Darwin published his masterly work, "The Origin of Species." It created a furious storm of criticism, which raged through England, the

Thomas Henry Huxley, with whom we close was a kindred spirit of Tyndall, but his early days had been more like Darwin's except in the matter of means. Huxley's parents were not in good circumstances and the boy who was born at Ealing in May, 1825, had a rare struggle for a medical education. He wanted to be a mechanical engineer, but had to be a doctor. So a doctor he became, but,

work, and he spoke not only from the abundance of his splendid brain, but from his heart. His value as a speaker and writer was never more apparent than when Darwin published his "Origin of Species." Critics fell upon it to rend it to pieces, but Huxley was superb, and turned the battle against the enemies of the man who was too shy to appear in public debate to face his fierce critics.

like Darwin, found fame on the sea. He had on the Rattlesnake an appointment similar to Darwin's on the Beagle, and, after voyages in two ships, came home with a fine collection of specimens from which he hoped to give the world new light on various points in biology. But he had no money with which to carry out his work, and, in order to get means with which to live, he was on the point of throwing aside his collection and going off again to sea, when, luckily, he was appointed lecturer in the Royal School of Mines. At



**BARON CUVIER EXAMINING AN EXTINCT MONSTER**  
Cuvier was one of the greatest scientists of modern times and had a marvellous intellect. He was the first to show the close relation of living animals to the extinct monsters of the past, and here we see him at the Sorbonne in Paris examining fossil bones.

last he was able to carry on his work and make his influence in science felt. He had wretched health, but he had the courage of a lion, and worked when other men would have given up the fight. By diligent study he made himself one of the most lucid and attractive writers and speakers in England. He had wit, and lightning readiness, he had eloquence. Best of all, his soul was in his

Huxley soon became the most famous popular lecturer on science of his day. His lectures attracted crowds, among them working men and the richest people in London. No man had more influence. One day he hailed a cab and bade the driver take him to a hall where he was about to lecture. Arrived at his destination, Huxley offered his fare, but the cabman would not take the money. "No, Mr Huxley," he said, "your lectures have done me too much good for me to let you pay me my fare. It is an honour to have driven you, sir!" And Huxley, who

had not dreamed that the man recognised him, accepted the compliment and passed to his lecture a happy man. Huxley lived for seventy years, and was one of the brightest figures of the nineteenth century, a man of spotless life, and of unselfish devotion to the service of his fellows, and to the great science that he loved and adorned so well.

The next Men and Women begin on page 5217

Thomas Henry Huxley, with whom we close was a kindred spirit of Tyndall, but his early days had been more like Darwin's, except in the matter of means. Huxley's parents were not in good circumstances and the boy, who was born at Laling in May, 1825, had a rare struggle for a medical education. He wanted to be a mechanical engineer, but had to be a doctor. So a doctor he became, but,

like Darwin, found fame on the sea. He had on the Rattle-snake an appointment similar to Darwin's on the Beagle and, after voyages in two ships, came home with a fine collection of specimens from which he hoped to give the world new light on various points in biology. But he had no money with which to carry out his work, and, in order to get means with which to live he was on the point of throwing aside his collection and going off again to sea, when, luckily, he was appointed lecturer in the Royal School of Mines. At last he was able to carry on his work and make his influence in science felt. He had wretched health but he had the courage of a lion, and worked when other men would have given up the fight. By diligent study he made himself one of the most brilliant and attractive writers and speakers in England. He had wit, he had lightning readiness, he had eloquence. Best of all, his soul was in his

work, and he spoke not only from the abundance of his splendid brain, but from his heart. His value as a speaker and writer was never more apparent than when Darwin published his "Origin of Species." Critics fell upon it to rend it to pieces, but Huxley was superb and turned the battle against the enemies of the man who was too shy to appear in public debate to face his fierce critics.

Huxley soon became the most famous popular lecturer on the science of his day. His lectures attracted crowds, among them working men and the richest people in London. No man had more influence. One day he hailed a cab and bade the driver take him to a hall where he was about to lecture. Arrived at his destination, Huxley offered his fare, but the cabman would not take the money. "No, Mr Huxley," he said, "your lectures have done me too much good for me to let you pay me my fare. It is an honour to have driven you, sir!" And Huxley, who



**BARON CUVIER EXAMINING AN EXTINCT MONSTER**  
Cuvier was one of the greatest scientists of modern times and had a marvelous intellect. He was the first to show the close relation of living animals to the extinct monsters of the past, and here we see him at the Sorbonne in Paris examining fossil bones.

had not dreamed that the man recognized him, accepted the compliment and passed to his lecture a happy man. Huxley lived for seventy years, and was one of the brightest figures of the nineteenth century, a man of spotless life, and of unselfish devotion to the service of his fellows, and to the great science that he loved and adorned so well.

The next Men and Women begin on page 527

Yet this little boy had learned all his letters, for she threw down the alphabet all mixed together, and he picked them up, called them by their right names, and put them all in order.

The next place we came to was Gaffer Cook's cottage. Here some poor children met to learn, and all came round little Margery at once, and, having pulled out her letters, she asked the boy next her what he had for dinner.

He answered, "Bread"—for the poor children in many places live on very little indeed.

"Well, then," says she, "set the first letter."

He then put up the letter *B*, to which the next added *r*, and the next *e*, the next *a*, the next *d*, and it stood thus "*Bread*."

"And what had you, Polly Comb, for your dinner?"

"Apple-pie," answered the little girl, and so the lesson went on.

The next place we came to was Farmer Thompson's, where there were a great many little ones waiting for her.

"Little Mrs Goody Twoshoes," says one of them, "where have you been so long?"

"I have been teaching," says she, "longer than I intended, and am afraid I am come too soon for you now."

"No, but indeed you are not," replied the other, "for I know my lesson, and so does Sally Dawson, and so does Harry Wilson, and so do we all."

And they capered about as if they were overjoyed to see her.

"Why, then," says she, "you are all very good, and God will love you, so let us begin our lesson."

They all huddled round her, and though at the other place they were employed about words and syllables, here we had children of much greater ability, who dealt in sentences, which they set up and read aloud.

Mrs Williams, who kept a college for instructing little gentlemen and ladies in the science of A, B, C, was at this time very old and infirm, and it was decided that Margery should take up her work. Henceforth she was known as Mrs Margery.

One day Mrs. Margery brought home a fine raven which she had rescued from the cruel hands of some bad boys

Now, this bird, which she called Ralph, she taught to speak, to spell, and to read. He sat at her elbow, and when any of the children were wrong, she used to call out, "Put them right, Ralph!"

She had also a pigeon, which she had taught to spell and read, though not to talk. He was a very pretty fellow, and she called him Tom.

Soon after this a present was made to Mrs. Margery of a little dog, Jumper, and a pretty dog he was. Jumper was the porter of the college, for he would let nobody go out or come in without the leave of his mistress.

One Thursday morning Jumper all of a sudden laid hold of his mistress's apron, and endeavoured to pull her out of the school. She was at first surprised; however, she followed him to see what he intended.

No sooner had he led her into the garden than he ran back and pulled out one of the children in the same manner, upon which, she ordered them all to leave the school immediately, and they had not been out five minutes before the top of the house fell in.

The downfall of the school was a great misfortune to Mrs Margery; for she not only lost all her books, but was without a place to teach in. But a kind friend had it rebuilt for her.

Mrs Margery was much esteemed by her neighbours. One gentleman, Sir Charles Jones, had conceived such a high opinion of her that he offered her a considerable sum to take care of his family; but she refused. This gentleman sent for her afterwards when he had a dangerous fit of illness, and she behaved so tenderly that he made her promise to marry him.

The wedding day arrived, and they went to the church. But just as the clergyman had opened his book, a gentleman ran into the church and cried, "Stop! Stop!"

This gentleman turned out to be Mrs Margery's brother, who had just come from beyond the sea, where he had made a large fortune, and, hearing of his sister's intended wedding, he had ridden in haste to see that a proper settlement was made on her.

Mrs Margery, after her marriage, still went on with her good works. She was a mother to the poor, a doctor to the sick, and a friend to all in distress.

# THE BRAVE LITTLE DOG OF THE WOOD

**B**RIQUET was a poor woodcutter, who lived in the Forest of Lyons, with Bricquette his young and pretty wife, and Biscotin and Biscotine, his two little children.

Biscotin was a merry little brown-haired boy of seven years of age, and Biscotine was a charming maiden with bright blue eyes and golden hair, who was not quite six years old. The forest in which they lived was very wild and lonely, and their mother would never let them go farther than the shed.

Biscotin and Biscotine ran out, hand-in-hand, and went merrily down the path leading to the shed. Bichonne, of course, began to follow them, but their mother called the dog back, saying:

"No, Bichonne! Wait till they return, and if your master is still in the forest, you must go alone and look for him."

Biscotin and Biscotine did not find their father in the shed, and they were frightened at his absence.

"Oh, daddy's lost—daddy's lost!" said the little boy. "I will go into the



THE PLUCKY LITTLE DOG WOULD NOT LET THE WOLF COME NEAR THE CHILDREN

at the end of the garden, where their father stored his wood, lest some wolf should attack them, for there were plenty of these fierce animals about.

Bichonne, a grey-coated little dog, with a red nose and soft brown eyes, was their only playmate. But he was so lively and good-natured that they never wearied of playing with him all day long in the green space before the cottage door.

One winter night Briquet was late in coming home, a most unusual proceeding. "Run down to the shed, my darlings," said Bricquette to her children, "and see if you can find your father there."

forest and find him, or let the wolves eat me!" And he ran into the wild, dark forest, and Biscotine took his hand and went with him.

Shortly afterwards, however, the father returned to his cottage by another path.

"Where are the children?" he exclaimed, surprised at their not coming to greet him.

"They went as far as the shed to search for you," said his wife, looking startled. "They must have gone into the forest. Oh, the wolves—the wolves!" Briquet threw down his load of wood, and seized his axe, and looked round

"I cannot understand," he exclaimed "Oh, you can't?" said she "I can, though You like that hideous, villainous-looking woman better than your own true wife!"

"Lili-Tsee what do you mean? That portrait is the living image of my poor dead father I found it in the street the other day, and put it in your vase for safety"

"Hear him! He wants to tell me I do not know a woman's face from a man's," replied Lili-Tsee, more angrily

quarrel, he thought, must not be allowed to continue It was probably some slight misunderstanding which he would soon be able to put right

"My children," he said, putting his head in at the door, "why this unseemly anger? Why this dispute?"

"Father, my wife is mad"

"All women are so, my son, more or less You were wrong to expect perfection It is no use getting angry."

"My husband has a portrait of a woman hidden in my rose-leaf vase"



THE PRIEST TOOK THE GLASS IN HIS HAND AND LOOKED AT IT EARNESTLY

Things really began to look serious It seemed as if their married life, which had hitherto been passed in happiness, was to be completely spoiled and made miserable by this mysterious portrait

Kiki-Tsum was wild with indignation The accusation of his wife was perfectly ridiculous Of course the portrait was not that of a woman, but of his father It was impossible that he could be mistaken The loud, angry words attracted the notice of a Japanese priest who was passing He stopped and listened for a moment Such a

"I swear that I have no portrait but that of my poor dead father"

"My children, show me the portrait"

The priest took the glass and looked at it earnestly He then bowed low before it, and, in an altered tone, said,

"My children, settle your quarrel and live peaceably together You are both in the wrong This portrait is that of a saintly, venerable priest I know not how you could mistake so holy a face"

He blessed them, and then went away, carrying with him the glass to place with other precious relics of the church



goddess of brave deeds, to help him, and she gave him a brazen rattle. Hercules stood on the shores of the lake and made the woods re-echo with a terrible din. The startled birds flew out into the open, and Hercules shot them one by one with his poisoned arrows.

### THE MAD BULL OF CRETE

**M**INOS, King of Crete, an island to the south of Greece, had once promised to sacrifice a huge bull to Neptune, the god of the sea. Because of its great size and beauty, however, Minos had kept it for himself. The bull went mad and began to destroy the crops of the island. Hercules captured it, and brought the raging beast alive to Mycenæ as his seventh labour, but King Eurystheus foolishly let it loose, and it crossed the Isthmus of Corinth and ravaged the valley of Marathon, in Attica.

### THE MAN-EATING HORSES

**D**IONEDES, King of Thrace, was so cruel that he was wont to throw all strangers to some wild horses, which devoured them. Hercules, with some of his brave friends, sailed to Thrace, attacked and captured the tyrant, and gave him to his own horses to eat. Hercules then brought the horses over the sea to Mycenæ, and drove them up into the mountains, where they were torn to pieces by other wild beasts.

### THE GIRDLE OF THE AMAZON QUEEN

**I**N the ninth labour Hercules had also to make a long journey. This time he was sent to fetch the girdle of Hippolyte, the queen of the warlike Amazons, who dwelt in the land of Scythia, in the south of the country we now call Russia. Some say that he killed the queen after a hard fight, and others that he only captured her and gave her in marriage to his friend Theseus. At any rate, he succeeded in his object of bringing the famous girdle back to Eurystheus.

### THE BATTLE WITH THE GIANT

**F**AR away from Greece, in the unknown western sea, there was an island called Gades. Traders brought strange tidings thence of a three-bodied giant named Geryon, who owned beautiful herds of cattle, and a two-headed dog to watch over them. Hercules was sent to fetch these cattle. Many are the tales told by the Greek poets about this journey—how, for instance, scorched by

the heat, he tried to shoot the sun-god, who, admiring his audacity, gave him a golden bowl, wherein he sailed to the island, passing through the Straits of Gibraltar, the rocks looking down upon which were called the Pillars of Hercules.

The hero slew the giant's herdsman and his two-headed dog, but just as he was diving off the cattle Geryon came up in hot haste and seized him. After a terrific struggle Geryon was defeated. Even then all was not peaceful sailing homewards, for in Italy a fire-breathing giant called Cacus stole some of the herd, and hid them in a cave, dragging them backwards, so that their tracks should deceive their owner. Hercules, however, heard the lowing of the cattle, squeezed Cacus to death, and set them free.

### THE GOLDEN APPLES

**I**N a beautiful land in the west of Africa lived some nymphs called the Hesperides. It was their duty to guard the fruit which Mother Earth had presented to the goddess Juno as a bridal gift. A sleepless dragon guarded the plantation where grew the golden apples, and the way was full of difficulties that led to it. After many wanderings and terrible fights with giants and tyrants, Hercules succeeded in catching Nereus, one of the gods of the sea, who changed into all kinds of shapes in his endeavours to escape from the strong hands that gripped him. Finding all his wiles of no avail, he resumed his natural shape, and sent Hercules to Atlas, who agreed to bring the fruit, on condition that Hercules supported the heavens while he was away.

### THE DOG OF THE UNDERWORLD

**A**T the entrance to Hades, the abode of the dead, there kept guard a three-headed dog named Cerberus, whose duty it was to prevent the living from entering and the dead from escaping out of the shadow-kingdom. Pluto, the dark-visaged King of the Underworld, gave Hercules permission to take the dog up into the light, provided that he did not use weapons. This Hercules, by his mighty strength, succeeded in doing, and he also led it back uninjured. Hercules was then freed from his labours, and went about the world doing many brave and noble deeds, and has ever since been honoured as the best type of physical strength.

The actual path of the cannon-ball is the result of the acting together of these two forces. Sooner or later gravitation gets the upper hand, especially as the resistance of the air helps it, but for every moving thing—a cannon-ball, or an atom of gas in the air, or anything else—there is a certain speed at which it would leave the earth altogether.

**WHY DOES IT TAKE MORE POWER TO STOP A TRAIN THAN TO START IT?**

We might extend this question by asking why it takes more power to stop the train the faster it is going. We find, indeed, that the power required to stop the train depends on the mass of the train, and on its speed. The greater these are, the greater is the power in the train, and the greater will be the power that is required to stop it, for this must be exactly equal to the power in the train.

When a train is at rest, the power required to start it depends simply on the weight, or, to use the best word, the mass, of the train. We all know that it takes more effort to move a heavy thing than a light one. We know, too, that it is one matter to let a heavy thing rest on the foot, and another matter to let it fall on the foot, and the greater the height it falls from, the more it hurts. That is because the greater the height from which it falls, the faster it is moving when it strikes the foot.

Such a case teaches us that movement adds power to anything, and that is so, for movement is itself a form of power. More than that, the greater the weight of the moving mass, the greater is the power that was required to move it, and therefore the greater is the power required to stop it.

**HOW DOES SEAWEED TELL US WHAT THE WEATHER IS GOING TO BE?**

Of course, seaweed does not foretell the state of the weather in any direct way, it merely tells us something which gives us some guidance as to the weather. A barometer, also, does not tell us about the weather itself, but, like the seaweed, it indicates something that has to do with the weather. As the barometer and the seaweed tell us different things, we should perhaps be able to know more about what the weather was likely to be if we used them both, and then noticed what usually happened when they did certain things.

The barometer simply tells us how heavy the air is at any given time, and from that fact we can make certain guesses, more or less likely to be right, as to what will happen. The barometer tells us nothing else at all, even though we often call it a weather-glass.

The seaweed tells us nothing about the pressure, or heaviness, of the air at any given time, but it tells us about the moisture of the air and about that only, or perhaps, in a way, it also tells us a little about the warmth of the air, though we can feel that for ourselves.

When a piece of seaweed feels very damp, it tells us that there is a good deal of moisture in the air, and rather more than the air can well carry, so that it is glad to unburden itself into the seaweed as far as possible. Now, that means that the air may very likely unburden itself soon on a bigger scale by means of rain. When the seaweed is dry, it means the opposite of this.

**IS IT A SIGN OF RAIN WHEN THE SMOKE IS BLOWN DOWN THE CHIMNEY?**

It may be, or it may not be. If we think about this question for ourselves, we shall see that no one could answer simply Yes or No to it, for so many different things come into it. The travelling of smoke up a chimney and of wind down it are complicated matters.

We may be sure that when the wind blows down the chimney the air is not still, and wind very often brings rain, for wind is moving air, and this air may be laden with moisture, which is apt to fall as rain.

But though wind and rain often go together, so that rain is more likely to fall when the smoke is blown down the chimney, yet there are winds which are usually dry, and bring no rain with them. Different chimneys smoke with different winds, and some smoke with all winds, and some with none, so, plainly, it is impossible to answer this question, except in a general way.

**WHY DO THE TREES NOT DIE IN WINTER LIKE THE FLOWERS?**

This question depends upon a mistake as to the nature of trees and flowers. A flower is only part of a plant; it is a special part, or organ, made by the plant for a special purpose, which is the production of seeds to produce new plants. We must not speak of the flower as if it were a plant. It happens to be

waves, like those of light. The law is that the angle at which the wave approaches the surface which reflects it is the same as the angle at which the light will leave that surface. This law is strictly followed by all rays of light that strike the mirror, and if our eyes are rightly placed we can catch the rays as they are reflected from the glass to our eyes.

If we think of an india-rubber ball instead of a ray of light, we shall understand this quite easily. Anyone standing far to one side of the mirror might throw a ball at an angle against it, and we know that it would come off the mirror at a corresponding angle. If now, instead of a ball thus reflected, we think of a ray of light, we shall see how it is possible for the mirror to show us things that are not immediately opposite to its surface.

**WHY CANNOT WE GRASP A BAR TIGHTLY WHEN WE FIRST WAKE UP?**

When we are taken captive by intense laughter, we cannot hold tightly to things, and the same is true in some other states of mind, as when we just wake up. Now, in all such cases we know that the necessary muscles are there, as large as ever, and so we may be sure that the explanation is somewhere else.

It might be in the nerves that carry the orders to the muscles, but if we consider what it means to be just awakened, or to be laughing very heartily, we shall agree that the key is to be found in the brain, for plainly the brain is in an unusual state in both these cases.

Further, it is the part of the brain concerned with the will that is at fault. During sleep the willing parts of the brain are at rest, and are only very scantily supplied with blood. Not until we are wholly awake do the centres for will get into action, and till then our voluntary acts are feeble, though acts not under the will, such as the beating of the heart, go on as well as ever.

In intense laughter the centres of will are starved of energy, which is being drained away very quickly in expressing our feelings. That is why intense laughter leaves us exhausted.

**WHY DO OUR EYES SPARKLE WHEN WE ARE MERRY?**

People are not at all agreed as to what really happens when we say that someone's eyes are "sparkling." We

all know that something happens in the eyes of people when they are delighted, and we know that it looks as if they shone, or something shone through them or from their surface. But if we watch very carefully, whenever our friends give us a chance, we shall find that there is more to notice than we thought.

Probably it is not the eye at all, in itself, but the eyelid that makes the difference. When we express merriment, the chances are very great that, whatever things look like, the effect is really obtained by the moving of some muscle or other.

In this case, people who have watched carefully declare that the eyelids make little, quick, lively movements, which attract the attention to the eye. Every time the eyelid falls it brushes a fresh tear over the eyeball, so that the surface of it is kept supplied with an unusual amount of fluid, and glistens for just the same reason that it glistens when we cry. But it is the eyelid that makes the difference, and not the eye at all, and this really causes the sparkling.

**WHY MUST THE CLAWS OF CAGED BIRDS BE CUT?**

Such things as bristles, hair, teeth, claws, and nails behave differently in various animals, according to the kind of use they are likely to be put to. The rule, on the whole, is that when any of these things are liable to be used constantly in such a fashion as to rub them away, they keep on growing continuously throughout the life of the animal.

Our own teeth do not grow continuously, but the teeth of animals often do so. For instance, a hare may die of starvation because it has lost one of its teeth, and the tooth in the other jaw, opposite it, having nothing to rub against, grows and grows, and at last forces the poor creature's mouth open and so kills it by starvation.

Claws and teeth follow the same rules in many ways, for they belong to the same class. A bird's claws are meant to be constantly used. When we keep birds captive, and feed them without work on their part, the claws go on growing because they are no longer worn away by use, and the friction, or rubbing down, which that involves, so they require to be cut by us.

will. If we have materials like wool or sawdust or heavy curtain-hangings, which vibrate very badly and with much difficulty, they will absorb most of the sound wave and it will become faint.

#### WHY DOES THE PRICE OF BREAD CHANGE?

Bread has, on the whole, been getting dearer for many years past, and there can be no doubt that, whatever our politicians do, it will get dearer still for many years to come. Sometimes the price of bread depends upon accidental reasons. For instance, somebody in America buys up a great quantity of wheat until he has the command of the market, and then sells it at high prices.

But, apart from this, wheat is getting dearer because the wheat-eating population of the world is increasing much more quickly than the world's supply of wheat. This is a very serious matter, which must have tremendous consequences. We in England produce only a tiny proportion of the wheat that we eat.

Great quantities of our wheat come from America, and the population of America is increasing so much more quickly than its wheat that every year it is having less wheat to spare for export, and it is certain that, if things go on as they are now, in twenty years, or less, America will be sending no wheat abroad, but will be keeping all she has to feed her own people with.

This, of course, means that bread will get dearer, and it will also mean that we shall have to grow as much wheat as we possibly can in our own country.

#### WHY ARE WE NEVER SATISFIED?

There are a certain number of people in the world who *are* satisfied. They are to be found more especially in the East, but among the more active races of mankind it is scarcely possible to meet anyone who is satisfied. Even those who are contented look forward to a better life beyond this world. Now, we are always told that we should be satisfied, and that it is a great mistake always to go on striving and striving, and never to be content.

But it is one of the highest marks of human nature at its best that it always goes on, and that, whatever it attains, it always sees that there is something better beyond. So someone invented the phrase "divine discontent" to express the splendid longing that is in the heart

of man. This becomes divine when the longing is not for ourselves, but for others and for the future of mankind.

If we carefully study the development of life in the world, we find that this quality of not being contented, this power to form a vision of the future and to try to realise it, is the great mark of mankind at its best; and it is a blind and foolish mistake to complain that people are never satisfied. What we should try to do is to stop the foolish and trifling dissatisfactions around us, and to replace them by something better.

We often speak of the Founder of Christianity as "gentle Jesus," but no one since the world began was ever more fiercely dissatisfied with evils and shams than He was, and His followers should be like Him in this respect.

#### CAN ONE PERSON INFLUENCE ANOTHER'S HEALTH BY WILL-POWER?

There is no doubt what this question means, though it is not very clearly expressed. If, by the exercise of our will, we take care of other people, we can, of course, influence their health in that way. No doubt what is meant is: Can we affect the health of other people simply by willing to do so, without doing anything else? The answer most certainly is that we cannot, and it is a most important answer, for endless harm has been done in the world for ages past because men have believed that mere willing on the part of their enemies could affect them in this way.

The supposed great instance of the exercise of will-power is when people are mesmerised, or hypnotised. They pass into a curious kind of waking sleep, in which their health can be much affected for good or evil. It is supposed that this is done by the will-power of the person who hypnotises them. This is utterly untrue. It has been proved by careful experiments that as long as the hypnotiser pretends that he is willing and exercising a great power, he can let his thoughts wander as much as he pleases, and the result will be just the same.

The fact is, that if people can be got to believe in the possibility of it, they hypnotise themselves, and all the talk of the great will-power of the hypnotiser is nothing else than mere nonsense.

The next Questions are on page 5247

## A FELLOW BY THE NAME OF ROWAN

WHEN war broke out between America and Spain, the first thing for America to do was to send a message from the President of the United States to the leader of the insurgents in Cuba. This leader, Garcia by name, had to be reached at all costs and told what America meant to do. It was also necessary to know definitely that he would fight on the side of America against Spain.

But could he be reached?

Where was Garcia? He was somewhere in the wild mountains of war-stricken Cuba—somewhere, miles from cities, miles from postmen and telegraph boys, miles from everything.

How could the President of the United States reach him? With all the vast wealth and power at his disposal, the great President was helpless. He could not say to Garcia, "Help me, and I will help you." He could not say so simple a thing as that, although he was surrounded by telegraph and telephone wires, and had thousands of men to obey his commands.

But someone came to him and said, "There's a fellow by the name of Rowan who will find Garcia for you."

This fellow Rowan was summoned into the President's presence. He was asked if he could find Garcia. He said he would try. The President liked the look of the man, liked his way of speaking, and gave him a letter for Garcia. Rowan took the letter and placed it in an oilskin pouch, which he strapped

round his waist, next to the skin. Then he walked out and disappeared. In four days' time an open boat crept toward the coast of Cuba under the blackness of a midnight sky. The boat was shot forward on a wave, it grounded on the beach, and before a second wave reached it a fellow by the name of Rowan was walking up the shingle to the cliffs.

Three weeks passed away rapidly.

At the end of that time a man appeared on the opposite side of the island, entered a boat, and was towed away. He had walked from shore to shore, he had penetrated a tangled jungle, he had crossed mountains, he had evaded a thousand rifles and a thousand daggers in a land hostile to his race and country, and he had found Garcia.

Thus appears for a brief moment on the stage of history a fellow by the name of Rowan, and as silently as he appears he disappears again into the darkness and the silence, the hero of a flashing moment.

He tells us nothing of himself. We know nothing of his sufferings, his nights passed in jungle and mountain, his days surrounded by fierce and passionate enemies, his reception by Garcia, his return to the President of the United States. A silent hero—a man of no word at all—but a doer. And be sure that this act of his is not the only one which will stand to his credit in the chronicles of the angels. Such a man's life is one long, steadfast service.

## THE LITTLE GIRL WHO TRIED

A MOTHER and daughter were walking out one September day in 1881, when they heard the cries of children in distress. The daughter, Mary Lester, at once ran across a field in the direction of the sound, and found a little girl, about eleven years of age, struggling for life amid the green, slimy water of a stagnant pool, on the edge of which another child stood screaming.

Mary Lester at once plunged in, and with great difficulty, owing to the weeds that matted the surface, reached the drowning child. Then followed a terribly exhausting struggle, for the pond was very wide and deep. But the

rescuer got safely out with the little girl. The latter, plucky little soul, had undressed and gone into the water to save her brother, but in trying to reach him she had gone beyond her depth.

By this time Mr. James Jones, a schoolmaster, had arrived on the scene, and, learning that the little boy was still under the water, he jumped in and brought him to land, nearly lifeless. After a time, however, the child regained consciousness, to the delight of his brave little sister.

Shortly afterwards Miss Lester was presented with a handsome silver medal to commemorate her very gallant act.

different possible kinds of them, and to learn exactly how they differ in their effects upon the human body.

Below the red rays there are, as we know, the rays of radiant heat. These also vary very widely, just as the rays of visible light do, and a great American student of the subject has made wonderful discoveries about them. These rays cannot be seen, and when rays cannot be seen they can only be studied in some other way. They can be studied, for instance, by means of the heat they produce, and so this man of science invented a marvellously delicate instrument, which is really nothing more or less than a thermometer, but vastly more delicate than the best of ordinary thermometers. By means of this instrument he has been able to study heat waves in detail, and he has shown that they differ from each other, and, indeed, make up a long spectrum just like the spectrum of visible light.

The one is, of course, a continuation of the other. This spectrum, too, contains lines and places which correspond to the dark lines that can be seen in the spectrum of visible light.

#### THE KEYBOARD OF INVISIBLE WAVES THAT GIVE US LIGHT AND ELECTRICITY

This wonderful keyboard of waves in the ether extends still farther below the heat rays. The lower waves are slower and bigger. We know them best by their electrical properties, for they are electric waves—the waves that run in the ether inside the wire of a telegraph or telephone, and the waves, needing no wire, which are used in wireless telegraphy. It is extremely important and useful for us to understand that simply by moving down the keyboard, so to speak, from visible light we come to the waves that make an electric current.

Now, this can only mean that light and electricity are as like each other as the sounds produced by the middle octave of a piano and the sounds produced by the notes near the bottom of the piano. We rightly use the one word, sound, to describe both of these things, for they are really the same. We might say, then, that electric waves are really light waves which we cannot see, but this is not the best way of putting it. The best way of describing them is to speak of the electric theory,

or the electro-magnetic theory, or light. This theory simply means that light is a kind of electricity. All the waves in the ether, that travel at the same enormous speed, are really of one and the same kind, and the only word that describes them is the word electricity.

#### THE LIGHT WAVES THAT EXCITE OUR EYES AND THE WAVES THAT EXCITE OUR SKIN

It so happens that we possess in our bodies eyes which have the power of being excited by about one octave of these electric waves, and to that octave we give the name of light. It is really electricity. Other electric waves which happen to be longer, and of which fewer happen to be made in a second, affect us in a different way. They do not excite our eyes, but they excite our skin and perhaps make us jump.

Electric waves, including the waves of light, move in straight lines, all of them at a known speed. Just as in the case of sound, or the power of gravitation, or the power of magnetism, the intensity of light gets less very quickly as we pass away from the place where it is made. The rule is that at twice the distance it has one-fourth the intensity, at three times the distance one-ninth the intensity, and so on. In other words, the intensity of light, like the intensity of all these other things, varies inversely as the square of the distance.

As in the case of radiant heat, some substances will let light through, and others will soak it up or absorb it, and others will reflect it from their surface. No one can yet explain what are the differences in different kinds of substances which make them behave toward light in these different ways. Of some things, however, we can be certain.

#### HOW LIGHT IS LOST BY BEING CHANGED INTO HEAT

One is that when light is absorbed it is not destroyed, for we know that nothing is ever destroyed. What eternally happens everywhere, inside our bodies and in the great world, is not destruction, but transformation, and in this case the light is transformed into heat. That is only another way of saying what we all know so well—that things which the sun shines upon become hot, especially if they are dark things. We know, also, that when substances let light through them, the



listening to John he saw Jesus approach, saw Him present Himself for baptism, and heard the Baptist pronounce words of special blessing on the young carpenter. When he went home he narrated the incident to his brother, and Simon Peter heard the tale with interest. Perhaps they discussed the matter as they mended their nets, or as they fished together under the stars on the Sea of Galilee. Their partners, James and John, must have shared these interesting conferences of the two brothers.

#### THE CALL OF ST. ANDREW, WHOSE CROSS IS ON OUR NATIONAL FLAG

Some time passed, and one day, when they were fishing from the shore, Jesus approached, as we see in the picture on page 3104, and said

"Follow Me, and I will make you fishers of men."

In this one sentence, so quiet and so simple, He flashed upon their conscience the light of eternity. They saw the immense comparison—fishing to earn their own bread, toiling to save others. Their old longing for a fuller life took complete possession of them. "And they straightway left their nets and followed Him."

Of the rest of St. Andrew's life we know little, except that he was ever on the fringe of that little inner brotherhood which was so close to Jesus. Peter, whom we see on pages 3425 and 3683, and James and John were the nearest to Jesus—James and John were brothers—and occasionally Andrew, the brother of Peter, was called into this inner circle—he was certainly near to the love of Jesus. It is said that he went as an apostle to many foreign countries; legend ascribes to him the working of extraordinary miracles, there was a gospel called *The Acts of Andrew*, but it was not accepted by the Church, and now it has vanished; tradition declares that he died a martyr's death by crucifixion, on a cross shaped like an X. This is the origin of the St. Andrew's Cross, with which we are familiar as our national flag.

#### THE FAILURE OF PETER, AND ITS LESSON FOR US ALL

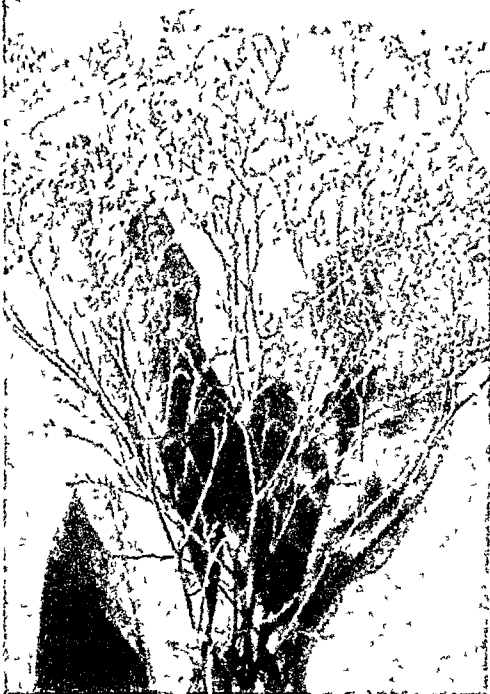
Now, among the four fishing partners—the brothers Simon Peter and Andrew, and the brothers James and John—Simon Peter, by the very title of his

marked out during his discipleship for special favour. It was to his home, Capernaum, that Jesus resorted, and that humble home came to be spoken of among the brotherhood as "the house" as if it were the very home and centre of the Master's life. Then it was Simon Peter that Jesus confided the care of the brotherhood after the Resurrection.

To follow the story of Peter's life as an apostle is to convince oneself of the truth of the Christian religion; nothing could be more human, more real, more honest. If our documents were false, the great struggle between Peter and Paul on which the history of Christendom depended—would have been hidden and denied. And from Peter's failure—failure Peter failed to realise the immensity of the Idea of Jesus—we learn a lesson of great value. If even Peter failed, how can we place our trust in the infallible judgments of later priests? Others may fail, like Peter, to interpret the true spirit of Jesus, of no man can it be said that it is impossible for him to be mistaken. Perhaps the failure of Peter is a merciful indication to men that they must seek only the Spirit of God, and not rely merely upon the ruling of mortal men, however high their positions, however long and unbroken their descent from the apostles.

#### THE MAN WHO ALWAYS WANTED TO GO FORWARD, BUT ALWAYS DREW BACK

Peter failed as head of the Church just as he failed in loyalty to Jesus in the hour of trial. Here is a summary of Peter's apostolate gathered from the great "Encyclopædia Biblica." Paul found Peter in a chief position in Jerusalem three years after his conversion at Damascus. Fourteen years later, with James, the brother of Jesus, and John, the son of Zebedee, he is called a pillar of the Church. At the Council of Jerusalem, Peter was not at the outset on Paul's side concerning the free gift of Christianity to foreign nations; he wanted foreigners to become Jews first, and Christians afterwards; but gradually, unwillingly, he came round to Paul's point of view. Later he went to Antioch, and, delighted by the progress of Christianity among foreigners, actually shared the meals of these people, in spite of his Jewish prejudices. But directly strict Jewish Christians came from Jerusalem and



**THE SPREADING SEA LAVENDER**

There are several kinds of sea lavender that grow on our coasts, but this is the common variety. It is found in abundance on muddy shores, and has been much used for its medical properties. The flowers are bluish purple.



**THE BUCK'S-HORN PLANTAIN**

Like the seaside plantain, the buck's-horn plantain grows in gravelly places near the sea. It is the only British plantain with divided leaves, and these are downy. The flowers on the slender flower-spike are pale yellow.



**THE VERNAL SQUILL**

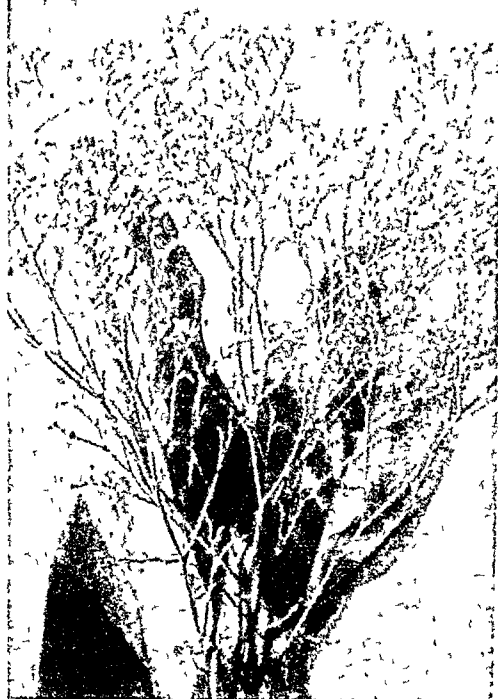
This lovely little plant, which is distinctly a spring flower, has clusters of fragrant, blue, star-like flowers, that in April and May cover the turf slopes of the Cornish coast as thickly as daisies cover the meadows.



**THE ROCK SAMPHIRE**

The fragrant rock samphire, with its thick and fleshy leaves and stems, is much gathered for pickling and makes an excellent relish. Samphire is a corruption of San Pietro, the Italian name, meaning the herb of St. Peter.





**THE SPREADING SEA LAVENDER**

There are several kinds of sea lavender that grow on our coasts, but this is the common variety. It is found in abundance on muddy shores, and has been much used for its medical properties. The flowers are bluish purple.



**THE BUCK'S-HORN PLANTAIN**

Like the seaside plantain, the buck's-horn plantain grows in gravelly places near the sea. It is the only British plantain with divided leaves, and these are downy. The flowers on the slender flower-spike are pale yellow.



**THE VERNAL SQUILL**

This lovely little plant, which is distinctly a spring flower, has clusters of fragrant, blue, star-like flowers, that in April and May cover the turf slopes of the Cornish coast as thickly as daisies cover the meadows.



**THE ROCK SAMPHIRE**

The fragrant rock samphire, with its thick and fleshy leaves and stems, is much gathered for pickling and makes an excellent relish. Samphire is a corruption of San Pietro, the Italian name, meaning the herb of St. Peter.

flowers or seed-spikes to be plantains, but the leaves of these are quite different from the plantains we meet with in fields and waste places. One of these is called the seaside plantain, and its leaves remind us of the ribwort plantain, but here they are much narrower, half an inch or less in width, though they may be a foot long. It flowers from June to September. The other kind is the buck's-horn plantain, so called because its leaves are divided in a way that suggests a deer's antlers. It flowers from June to August.

Here, too, are the scurvy grass and white stonecrop that we find on the mountain rocks. We also find on the mountains the wall pennywort, but it is much more at home here near the sea. Its flat, round leaves, with the stalk in the middle of the underside, remind us of the marsh pennywort found in the bogs, but they are not related at all.

#### The Wall Pennywort

The wall pennywort is one of the stonecrop family, though not belonging to the same branch of it as our white and yellow stonecrops. It has a thick, tuberous root-stock, crammed into the crevices of rocks or between the flakes of the stone hedge, with only its thick, glossy green, penny-shaped leaves showing until it puts forth its long flower-stem, which is often nearly two feet in length, and closely covered almost from top to bottom by the tubular flowers. A few stem leaves have the stalk at the side.

The mouth of the corolla is notched into four or five lobes, and within are ten stamens and five styles. There is nectar at the far end of the tube, but the colour of the flower does not appear to be bright enough for bees or butterflies, the only visitors that have been observed being tiny thrips that most flowers take pains to keep out. In this case they appear to be useful. The wall pennywort flowers in June and July, but it is not found on our eastern coast.

#### The Vernal Squill

About the time that the sea pink is beginning to flower, we shall find the bright blue, fragrant blossoms of the vernal squill, or sea onion, a near relation of the bluebells of the woods, but instead of being bell-shaped, the flowers of the vernal squill spread open and show their six stamens, which have

purple anthers. The leaves are similar to those of the bluebell, but much smaller, and underground there is a little bulb about a third of an inch thick. The vernal squill only appears along parts of the western coasts of England, Wales and Scotland, and the north and east districts of Ireland.

#### The Autumnal Squill

In similar places, from July to September, we may find the red-purple flowers of another member of the family—the autumnal squill. This has a larger bulb, but it has the strange habit of not sending up its leaves until after it has flowered. The autumnal squill is found only south of Gloucestershire and Middlesex, and in the Channel Islands.

#### The Sea Milkwort

In walking over the low rocks above high-water mark we shall see the sea milkwort, which really has no connection with the milkwort of the downs. This is a member of the primrose family, and would be more fitly named the sea pimpernel. Though its stems are six or eight inches long, we shall not find them reaching that height above the rock, for they are much inclined to trail or to take a half-erect position.

The small, oval, stalkless leaves are in pairs, and each pair is at right angles to the pair above or below it. The flesh-coloured, crimson-dotted flowers come out singly between the leaf and the stem, and are without stalks. But it is the bell-shaped calyx that is coloured, for there are no petals. Within, there are five stamens and a pistil, which consists of an egg-shaped ovary and a simple style with a sticky tip. The flowers are out from early in May to the end of July. The only places where the sea milkwort is found inland are the salt districts of Cheshire and Worcestershire.

#### The Samphire

Anywhere among the rocks, whether it be just above high water or far up the tall cliffs, we shall find the samphire, a rather quaint umbel-bearer, whose solid stems and leaves become swollen and juicy, as is the case with many other seaside plants. In some seaside places it has been so much gathered for making into a pickle that it is no longer to be found. We might think it is a



**THE RED BARTSIA**

This plant is by no means confined to seaside districts, but grows in waste places and fields all over the country. The reddish-green leaves and the small pink flowers give the whole plant a reddish appearance.



**THE SEA ASTER**

The sea aster, or sea starwort, found growing in great abundance on our salt marshes, is frequently ugly and unsightly through being covered with mud. When grown at higher levels it is quite a handsome plant.



**THE BLUE FLEABANE**

Though this plant is not a seaside flower, it may often be seen growing near the sea on such places as old walls and other dry spots. The plant is very much branched and very hairy. It is by no means common.



**THE PLOUGHMAN'S SPIKENARD**

This plant has close relations, like the golden samphire, that grow on the salt marshes and sea-cliffs, but the ploughman's spikenard itself is found on chalky banks, not only near the sea, but inland too. It grows very erect.

plant without leaves, for it appears to be merely a much-branched and twiggy stem with umbels of yellow flowers

As a matter of fact, the flowers are white, but they are so very small that they do not show up so strongly as the yellow pistils and foot-stalks. There are leaves, too, and rather large wedge-shaped ones; but they are divided into three or five parts, and each of these parts, or leaflets, is again broken up into three very slender portions. Every part of the plant is thickened, and, except the flowers, the whole is of a blue-green tint. It flowers from June to September, and after the petals have fallen the pistils grow into purplish fruits

#### The Sea Campion

Another plentiful plant that grows about the cliffs, and on the edges of fields that may be above them, is the sea campion. Probably, when we see it, we shall think it is an old inland friend, the bladder campion, and we shall not be far wrong, for if it is not merely a seaside variety of that plant, it must have been so at no very distant date. It has similar leaves and flowers, but the stems are less erect than those of the bladder campion, and the white petals are somewhat broader. Although the white flowers are most abundant in the early summer, we may find them in plenty almost all through the year

#### The Seaside Convolvulus

Another plant that we shall recognise without much description is the seaside convolvulus, because, although it is very distinct, its flowers and leaves are similar in shape to those of the field convolvulus, or small bindweed. Its stem runs underground like that of the bindweeds, but its slender stems are shorter and rarely twine around other plants. Its leaves, too, are shorter, more kidney-shaped and fleshy. The flowers are a little larger than those of the small bindweed, and are pink or pale purple. It flowers in summer, and will be found only on sandy shores.

#### The Sea Holly

On the sand above high water, or where rock and sand meet, grows the sea holly, which is no holly at all but a relation of the samphire for it is an umbellifer. It has a short, thick, branching stem, with broad, roundish

leaves that are thick and leathery, and then margins are cut into bold teeth that end in very sharp spines. They are of a grey-green tint, and have the appearance of a "bloom" upon them. The bluish-white flowers are without the foot-stalks that are so common among umbellifers, so that they look more like a head of flowers, with two or three stiff leaves forming a sort of frill around them.

When we find them growing in sand so hot that we can scarcely bear our hand upon it, we shall understand the reason for their thick skin, which prevents all their moisture flying off, as it would do from a thin-skinned plant

#### The Sea Buckthorn

On sandy shores along the east coast, and extending south into Sussex, there grows in places a pretty shrub about eight feet in height, with drooping branches covered with egg-shaped and lance-shaped leaves that are dull green above and silvery-white beneath. This is the sea buckthorn, or sallow-thorn. It bears clusters of minute flowers from May to July, which are followed by orange-coloured berries.

These berries are rather acid, but in other countries they are made into jellies and sauces. Some of the branches are short, and end in long spines for the protection of the plant. The sea buckthorn is not related to the true buckthorns

#### The Tamarisk

Along the shores of the south and east coasts we shall meet with the tamarisk, a small evergreen tree that is not British, but has been introduced from the south of Europe, because it endures the salt breezes so well. Its slender branches, closely covered with minute leaves, have a very light and feathery appearance, and for half the year they end in spikes of small pink flowers. The tamarisk is a decidedly pleasant addition to our seaside districts.

Higher up these sandy shores we shall often see great hillocks of sand, which the wind blowing in from the sea has piled up, but the rain would bring all the sand back again if it were not for the plants that grow upon it and hold it together with their roots. Low-growing plants with their thick leaves, such as glasswort, saltwort, sea blite, orache, and chumwile, cover its surface, and



**THE SEA BUCKTHORN**

The sea buckthorn is a bushy shrub with leafy branches which end in thorns. The leaves grow on short stalks, and are dotted above and silvery underneath. The flowers are green and the orange-coloured fruit is acid.



**THE GLASSWORT**

The jointed glasswort, or marsh samphire, is abundant in the salt marshes around our coasts, and is sometimes used for pickling in place of the samphire, some people preferring it. It was formerly used in making glass.



**THE PRICKLY SALTWORT**

This hairy and much-branched plant, with its striped and angular stem and prickly leaves, rarely grows higher than a foot. It is common on sandy shores, and was once much used in preparing carbonate of soda.



**THE SEA BLITE**

Like the saltwort and the glasswort, the sea blite yields an impure carbonate of soda, formerly much used in the manufacture of glass. It is common on muddy seashores, and has a reddish hue in winter.

# FANCY DRESSES THAT COST NOTHING



An excellent idea for a winter afternoon is to organise a children's fancy-dress tea-party. The costumes need not cost anything. They should be made up from things found in the house. All the dresses shown in the pictures on this page are made up in this way. On page 4133 we read about Valkyries, and in the first picture here we see a Valkyrie, with helmet and breastplate made of cardboard, the armour of the knight in the fourth picture being made of similar material, covered with silver paper from tea-packets. The second picture shows a scarecrow, and in the third we see Santa Claus, with hair and beard of cotton-wool.



In the first of these pictures we see Peter Pan and Wendy, whose costumes are easily made. The children simply take off their shoes and stockings, and put on nightgowns over their ordinary clothes. In the middle picture is a dunce, and it is easy to dress for this character, as all that is needed is a dunce's cap, made out of a sheet of paper. The child in the third picture is Cinderella. All she needs for dress is a soiled overall and a broom.



The boy in the first picture is made up as an ancient Briton. His dress is a perambulator-rug, with a belt of brown paper, and a sword cut out of cardboard. There is really no limit to the number of characters we can represent if we are at all ingenious. The second picture shows Nell Gwynn. A girl from a charity school, as shown in the third picture, generally meets with much applause, and often wins a prize, if prizes are awarded, for the best dress. The last picture shows how a peaceful schoolboy can easily be transformed into a bold, dashing pirate by the addition of a stocking hat, a cardboard sword, and a sash of some coloured material, or even a shawl.

## THE ADJECTIVE LETTER

ONE of the very best games for the fireside is the adjective letter, which can be played by any number of children—the more the merrier. Nothing can be simpler, but few things cause more hearty laughter.

All that need be done is for one member of the party to write a letter full of blank spaces. These blank spaces should take the place of adjectives, and when the letter is ready the writer should call upon the party, one by one, for adjectives. He should put the adjectives down in the order in which they are spoken. The writer of the letter should not contribute adjectives himself, as the fun of the adjective letter lies in the quite accidental association of words. A member of the party may, for instance, frequently call himself or herself very unpleasant names, and the most ridiculous things come together when the blanks are filled up.

Here is a letter with blanks, which will show exactly how the game should be played.

Dear People,  
The new year has now begun its journey, and this is the time for making resolutions. The future of our lives is before us, and we set out on a journey through another year, full of hope ahead, and the memory of a Christmas behind. What a year the past has been! And what a year this one is going to be! Tommy will be six, Nancy will be eight, and every member of this party will be a year older when this year is past. That giant Old Age, who captures us all, creeps slowly on his way, ready to seize us in his grip when something like a hundred more years have come and gone. But let us make a resolution that will terrorise this enemy of childhood: let us one and all agree, on this very day, to be true to the Children's Encyclopædia, which keeps its readers young. With such a friend no child can ever be old, and we few, we band of friends, will look forward and say to all the world that we will be

With much love to all of you, my very people, I beg to sign myself,  
Your Friend

It is, of course, much more easy to write a letter about a particular party or a particular event, because the writer can make the letter much more interesting by bringing in the names of all the members of the party, or by referring to anything specially interesting to them. This letter, however, may be helpful at the beginning. Here it is given with the blanks filled up. The adjectives, which are printed in a different type, were all put in by chance.

Dear Happy People,

The *clean* new year has now begun its *rollicking* journey, and this is the *pretty* time for making *little* resolutions. The *high* future of our *glorious* lives is before us, and we set out on a *tender* journey through another *noisy* year, full of *stupid* hope ahead, and the memory of a *fair* Christmas behind. What a *dark* year the past has been! And what a *blue* year this one is going to be! *Dull* Tommy will be six, *horrid* Nancy will be eight, and every *simple* member of this *gracious* party will be a year older when this *dignified* year is past. That *grave* giant Old Age, who captures us all, creeps slowly on his *noble* way, ready to seize us in his *broad* grip when something like a hundred more *serene* years have come and gone. But let us make a *straightforward* resolution that will terrorise this *grand* enemy of childhood: let us one and all agree, on this very *green* day, to be true to the *beautiful* Children's Encyclopædia, which keeps its *loving* readers young. With such a *splendid* friend no child can ever be old, and we *joyful* few, we *grateful* band of friends, will look forward, and say to all the *stately* world that we will be *brilliant*. With much love to all of you, my very *ridiculous* people, I beg to sign myself,

Your Perfect Friend

The longer the letter is, the more fun it is sure to give, and parties are not likely to get tired of this sort of entertainment if the letters are drawn up so as to be personally interesting to every member of the party.

## THE GAME OF ORANGES AND LEMONS

IN the game of oranges and lemons the two tallest players stand opposite each other with their clasped hands held up to make an arch. One of these players is Orange and the other Lemon, but the rest of the players are not allowed to know which is which. A line is then formed in single file, and, as it passes under the arch, Orange and Lemon sing these words:

"Oranges and lemons,  
Say the bells of St. Clement's;  
You owe me five farthings,  
Say the bells of St. Martin's,  
When will you pay me?  
Say the bells of Old Bailey;  
When I grow rich,  
Say the bells of Shoreditch;  
When will that be?"

Say the bells of Stepney,  
I'm sure I don't know,  
Says the Great Bell of Bow

Here comes a light to light you to bed,  
Here comes a chopper to chop off your head!"

With the last words the arch descends on the player who is passing beneath, and he is a prisoner. He is then asked, in a whisper, if he will be an orange or a lemon, and when he has replied in a whisper, he is sent to stand behind the one chosen. The march now begins again, and when, one by one, all in the line have been served in this way, a mark is placed on the floor, and all the oranges, holding to each other from behind, pull against all the lemons. The side that succeeds in dragging the other side well over the mark on the floor wins the game.

and little pebbles are thickly embedded in a layer of sandstone, and look something like the plums and currants in a Christmas pudding. When the pebbles are sharp and angular instead of rounded, as we sometimes notice, the rock is called breccia.

The rocks formed by fire are as varied as those that owe their construction to the action of water. Granite we all know, whether it be red or grey, because it is the stone used for kerbs in all our towns and cities. A pitch-like stone, varying in colour from green to brown and yellow, that may be seen in veins or masses bursting through other rocks in the Isle of Arran, is pitchstone. Basalt is easily recognised by its black, uniform colour and its curious structure, which is in columns, like the Giants' Causeway, which we see on page 4821, and the Isle of Staffa, in Scotland.

Very often we see crossing another rock a vein of a dull, dirty-green colour, streaked with brown or red. This is the well-known serpentine that looks so beautiful when polished and made up into ornaments. It is found usually with the limestone rocks.

The metamorphosed, or changed, rocks have, as might be supposed, an appearance something like both the other kinds of rock—those formed by fire and those by water.

There is a rock that looks like granite, but the minerals of which it is composed are arranged more or less in layers. It has been called stratified granite, but it is really gneiss. Another rock, which has a slaty appearance at a distance, and consists of layers of white quartz and mica, is known as mica-schist. The thickness of the layers of each mineral vary greatly, but mica-schist always has an appearance that once recognised cannot be mistaken. These are the two principal rocks of the metamorphose class that occur in Britain.

It is, of course, very difficult to give such details as shall enable us to identify all the different kinds of rocks found in the United Kingdom, but the hints given should prove useful. And if when we travel or go for a holiday we take a small geological map with us, we shall be better equipped for our recreation of identifying the various formations of rock through which we pass.

## A DAINY MUSLIN WINDOW-CURTAIN

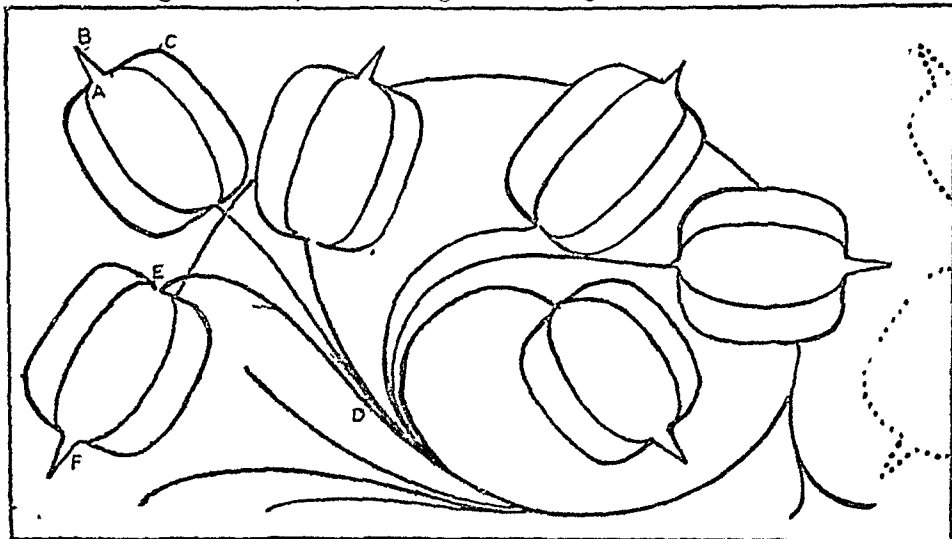
THE idea illustrated in picture 3 on the next page is a charming way of decorating short, white, book-muslin curtains, and the wonderful thing about it is that there is no need to have the pattern drawn on to the material, because this kind of muslin is transparent enough to be seen through. The pattern, which is drawn on paper, is therefore pinned underneath the muslin, and the work done on top.

The particular design shown below, which is made from the honesty plant, is a repeating pattern—that is to say, we work one section and shift it along to continue, and the design

We should cut it so that long threads are left to work with, and use a medium-sized darning-needle.

We must measure our window, cut the muslin to fit, and make the hem before we begin our pattern, which must be traced on to a sheet of note-paper from the picture, and outlined in ink. With two pins it can be fixed underneath the muslin, on the left side, two inches above the hem.

We all know the darning-stitch, which is described on page 3723, that and ordinary running stitch is all we have to use. If we have forgotten how to darn, we should turn



1. The pattern of the honesty design, exact size, to be pinned underneath the muslin as a guide to page 3723, where it is fully explained. The best thread to use is white flax thread—medium fine—at one penny a skein. Now to begin we tie a very tiny knot in the thread, and put the needle in at point A.



and little pebbles are thickly embedded in a layer of sandstone, and look something like the plums and currants in a Christmas pudding. When the pebbles are sharp and angular instead of rounded, as we sometimes notice, the rock is called breccia.

The rocks formed by fire are as varied as those that owe their construction to the action of water. Granite we all know, whether it be red or grey, because it is the stone used for kerbs in all our towns and cities. A pitch-like stone, varying in colour from green to brown and yellow, that may be seen in veins or masses bursting through other rocks in the Isle of Arran, is pitch-stone. Basalt is easily recognised by its black, uniform colour and its curious structure, which is in columns, like the Giants' Causeway, which we see on page 4821, and the Isle of Staffa, in Scotland.

Very often we see crossing another rock a vein of a dull, dirty-green colour, streaked with brown or red. This is the well-known serpentine that looks so beautiful when polished and made up into ornaments. It is found usually with the limestone rocks.

The metamorphosed, or changed, rocks have, as might be supposed, an appearance something like both the other kinds of rock—those formed by fire and those by water.

There is a rock that looks like granite, but the minerals of which it is composed are arranged more or less in layers. It has been called stratified granite, but it is really gneiss. Another rock, which has a slaty appearance at a distance, and consists of layers of white quartz and mica, is known as mica-schist. The thickness of the layers of each mineral vary greatly, but mica schist always has an appearance that once recognised cannot be mistaken. These are the two principal rocks of the metamorphose class that occur in Britain.

It is, of course, very difficult to give such details as shall enable us to identify all the different kinds of rocks found in the United Kingdom, but the hints given should prove useful. And if when we travel or go for a holiday we take a small geological map with us, we shall be better equipped for our recreation of identifying the various formations of rock through which we pass.

## A DAINTY MUSLIN WINDOW-CURTAIN

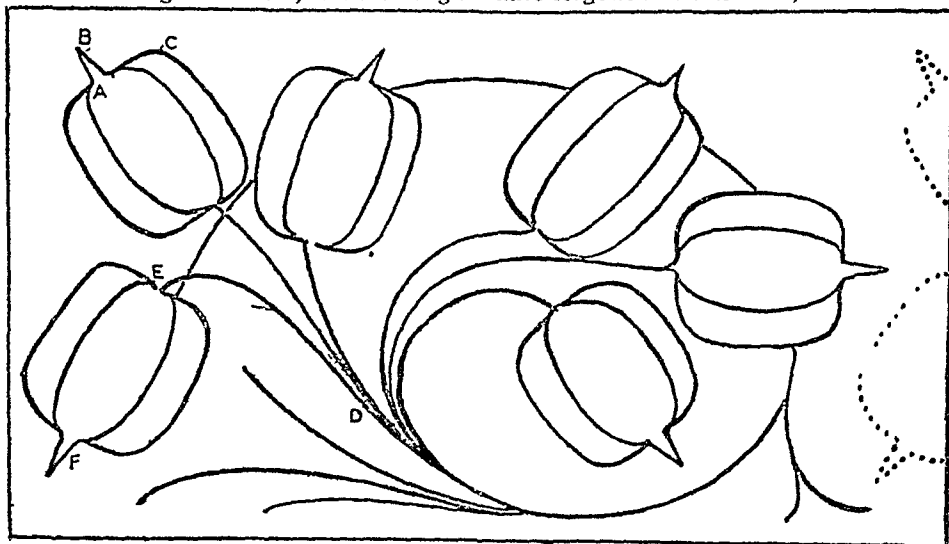
THE idea illustrated in picture 3 on the next page is a charming way of decorating short, white, book-muslin curtains, and the wonderful thing about it is that there is no need to have the pattern drawn on to the material, because this kind of muslin is transparent enough to be seen through. The pattern, which is drawn on paper, is therefore pinned underneath the muslin, and the work done on top.

The particular design shown below, which is made from the honesty plant, is a repeating pattern—that is to say, we work one section and shift it along to continue, and the design

We should cut it so that long threads are left to work with, and use a medium-sized darning-needle.

We must measure our window, cut the muslin to fit, and make the hem before we begin our pattern, which must be traced on to a sheet of note-paper from the picture, and outlined in ink. With two pins it can be fixed underneath the muslin, on the left side, two inches above the hem.

We all know the darning-stitch, which is described on page 3723, that and ordinary running stitch is all we have to use. If we have forgotten how to darn, we should turn



1. The pattern of the honesty design, exact size, to be pinned underneath the muslin as a guide is arranged to join on neatly, as indicated. The best thread to use is white flax thread—medium fine—at one penny a skein.

Now to begin we tie a very tiny knot in the thread, and put the needle in at point A

# MAKING A COLLECTION OF WOODS

A GREAT deal of amusement and instruction is to be obtained from a collection of different kinds of woods, and such a collection it is within the power of each one of us to make. The woods of the different trees are wonderfully varied in weight and solidity and marking, and by preparing sections of these we have a collection that is pleasing to the eye and that need take up very little room in the house.

Sections of wood for our collection should be made *across* the trunk, and they should be thin enough for the light to pass through. With a little practice such sections can readily be sawn. A good saw is necessary, and if the wood be dry it should be damped, so that the different parts of the material may hold together and a smooth section be provided.

## WHERE TO OBTAIN SPECIMENS

Specimens for our collection may be obtained in different ways. Of course, if we live in the country, especially in the neighbourhood of woods where trees are being felled, we may get permission to take sections from the trees. But it is astonishing how many really excellent and serviceable specimens are to be obtained for nothing at all in saw-mills, timber-yards, cabinet-making establishments, carpenters' shops, and so on. In fact, almost any place where different kinds of wood are used and dealt with is sure to provide us with some specimens, at any rate. While it is especially to be desired that our sections should be *across* the trunk of the tree, if this is difficult or impossible, sections cut lengthwise are by no means to be despised.

## HOW TO MOUNT THE WOODS

Our specimens should be as complete as possible—that is, the sections should be as large as we can obtain and conveniently store, but great size is not essential, and quite small sections a few inches square are quite large enough to show the characteristics and markings of the different woods. It is not necessary to mount the specimens, although, of course, the collection is much more presentable if every piece of wood is properly mounted.

It is necessary that we should be able to hold the wood up to the light and see its texture, but this may be easily done if we gum or glue the wood down upon a sheet of thick paper or card that has a neat oval opening cut in it, just like the opening in a mount for a photograph. In fact, if we can afford to buy them, photograph mounts, which may be purchased at any photographic shop and at most chemists' shops, would make admirable mounts for our wood.

We should see to it that, as far as possible, our specimens and their mounts are uniform in size, as they will look much neater if they are, and can be kept one above another in a box or letter-case. A fly-leaf of paper should be pasted on to each mount and folded over the specimen to keep it clean and undamaged. Upon this sheet, too, should be written the name of the tree from which the

wood comes, and the use to which the particular kind of wood is generally put. The more interesting and extensive the facts we can write down and keep attached to a specimen, the more valuable does it become.

## IMPROVING THE COLLECTION

To the clever boy or girl, many ways of improving the collection, both in appearance and in value, will occur. For instance, the mounts of the plain card or paper may be decorated in some neat way that will not distract attention from the specimen itself. Then, if we can obtain, in course of time, photographs or good printed pictures of the different trees represented in our museum of woods, the collection will be much more instructive.

It will be very interesting, too, if we live in the country, to have a collection within a collection, by keeping together specimens of the woods of the different trees that grow in our own neighbourhood. Then from time to time we can arrange our specimens round a room, and thus provide our friends with an entertaining exhibition. Trees that do not grow where we live, and whose wood's we are unable to obtain locally, are often to be found in the districts where our friends live, and so, by getting these friends interested in our collection, we may obtain some new specimens from them. This is a specially good scheme if we have friends living abroad.

## SOME WOODS TO OBTAIN

Our woods should, of course, be classified—that is, arranged in a proper order, and the proper order is according to the families of the different trees. There are the conifers, or pine family. It includes the silver fir, a white deal used for floors, the Norwegian spruce fir, the ordinary white deal of the carpenters, Weymouth pine, used much by builders; the Scots pine, or yellow deal, the larch, used for house and boat building; and the well-known yew, formerly employed in the making of bows for our English archers.

Then there are the various kinds of leaf woods, as distinct from the woods of trees that have needle-shaped leaves, like the pines. These will be found much denser in texture than the wood of trees of the pine family.

There is the oak, the most useful of all our timber trees, the elm, a wood which is valuable on account of the fact that it will not split or warp; the ash, a tough, elastic wood used much by carriage-builders and for oars, the wood of the various fruit-trees, such as plum, cherry, and chestnut, the beech, a very hard timber, the hawthorn, a reddish-white wood, the whitethorn, yellowish white in colour, the box and pear, used by engravers, maple, a reddish wood; sycamore, used for machinery and in the manufacture of charcoal, alder, another wood reddish in colour, walnut, willow, silver poplar, aspen, birch, elder, and hazel. All these have their own peculiar colours and markings and characteristics, and are well worth obtaining and keeping carefully in our timber collection.

# MAKING A COLLECTION OF WOODS

A GREAT deal of amusement and instruction is to be obtained from a collection of different kinds of woods, and such a collection it is within the power of each one of us to make. The woods of the different trees are wonderfully varied in weight and solidity and marking, and by preparing sections of these we have a collection that is pleasing to the eye and that need take up very little room in the house.

Sections of wood for our collection should be made *across* the trunk, and they should be thin enough for the light to pass through. With a little practice such sections can readily be sawn. A good saw is necessary, and if the wood be dry it should be damped, so that the different parts of the material may hold together and a smooth section be provided.

## WHERE TO OBTAIN SPECIMENS

Specimens for our collection may be obtained in different ways. Of course, if we live in the country, especially in the neighbourhood of woods where trees are being felled, we may get permission to take sections from the trees. But it is astonishing how many really excellent and serviceable specimens are to be obtained for nothing at all in saw-mills, timber-yards, cabinet-making establishments, carpenters' shops, and so on. In fact, almost any place where different kinds of wood are used and dealt with is sure to provide us with some specimens, at any rate. While it is especially to be desired that our sections should be across the trunk of the tree, if this is difficult or impossible, sections cut lengthwise are by no means to be despised.

## HOW TO MOUNT THE WOODS

Our specimens should be as complete as possible—that is, the sections should be as large as we can obtain and conveniently store, but great size is not essential, and quite small sections a few inches square are quite large enough to show the characteristics and markings of the different woods. It is not necessary to mount the specimens, although, of course, the collection is much more presentable if every piece of wood is properly mounted.

It is necessary that we should be able to hold the wood up to the light and see its texture, but this may be easily done if we gum or glue the wood down upon a sheet of thick paper or card that has a neat oval opening cut in it, just like the opening in a mount for a photograph. In fact, if we can afford to buy them, photograph mounts, which may be purchased at any photographic shop and at most chemists' shops, would make admirable mounts for our wood.

We should see to it that, as far as possible, our specimens and their mounts are uniform in size, as they will look much neater if they are, and can be kept one above another in a box or letter-case. A fly-leaf of paper should be pasted on to each mount and folded over the specimen to keep it clean and undamaged. Upon this sheet, too, should be written the name of the tree from which the

wood comes, and the use to which the particular kind of wood is generally put. The more interesting and extensive the facts we can write down and keep attached to a specimen, the more valuable does it become.

## IMPROVING THE COLLECTION

To the clever boy or girl, many ways of improving the collection, both in appearance and in value, will occur. For instance, the mounts of the plain card or paper may be decorated in some neat way that will not distract attention from the specimen itself. Then, if we can obtain, in course of time, photographs or good printed pictures of the different trees represented in our museum of woods, the collection will be much more instructive.

It will be very interesting, too, if we live in the country, to have a collection within a collection, by keeping together specimens of the woods of the different trees that grow in our own neighbourhood. Then from time to time we can arrange our specimens round a room, and thus provide our friends with an entertaining exhibition. Trees that do not grow where we live, and whose woods we are unable to obtain locally, are often to be found in the districts where our friends live, and so, by getting these friends interested in our collection, we may obtain some new specimens from them. This is a specially good scheme if we have friends living abroad.

## SOME WOODS TO OBTAIN

Our woods should, of course, be classified—that is, arranged in a proper order, and the proper order is according to the families of the different trees. There are the conifers, or pine family. It includes the silver fir, a white deal used for floors, the Norwegian spruce fir, the ordinary white deal of the carpenters, Weymouth pine, used much by builders, the Scots pine, or yellow deal, the larch, used for house and boat building, and the well-known yew, formerly employed in the making of bows for our English archers.

Then there are the various kinds of leaf woods, as distinct from the woods of trees that have needle-shaped leaves, like the pines. These will be found much denser in texture than the wood of trees of the pine family.

There is the oak, the most useful of all our timber trees, the elm, a wood which is valuable on account of the fact that it will not split or warp, the ash, a tough, elastic wood used much by carriage-builders and for oars, the wood of the various fruit-trees, such as plum, cherry, and chestnut, the beech, a very hard timber, the hawthorn, a reddish-white wood; the whitethorn, yellowish white in colour, the box and pear, used by engravers, maple, a reddish wood, sycamore, used for machinery and in the manufacture of charcoal, alder, another wood reddish in colour, walnut, willow, silver poplar, aspen, birch, elder, and hazel. All these have their own peculiar colours and markings and characteristics, and are well worth obtaining and keeping carefully in our timber collection.

# MAKING A COLLECTION OF WOODS

A GREAT deal of amusement and instruction is to be obtained from a collection of different kinds of woods, and such a collection it is within the power of each one of us to make. The woods of the different trees are wonderfully varied in weight and solidity and marking, and by preparing sections of these we have a collection that is pleasing to the eye and that need take up very little room in the house.

Sections of wood for our collection should be made *across* the trunk, and they should be thin enough for the light to pass through. With a little practice such sections can readily be sawn. A good saw is necessary, and if the wood be dry it should be damped, so that the different parts of the material may hold together and a smooth section be provided.

## WHERE TO OBTAIN SPECIMENS

Specimens for our collection may be obtained in different ways. Of course, if we live in the country, especially in the neighbourhood of woods where trees are being felled, we may get permission to take sections from the trees. But it is astonishing how many really excellent and serviceable specimens are to be obtained for nothing at all in saw-mills, timber-yards, cabinet-making establishments, carpenters' shops and so on. In fact, almost any place where different kinds of wood are used and dealt with is sure to provide us with some specimens, at any rate. While it is especially to be desired that our sections should be across the trunk of the tree, if this is difficult or impossible, sections cut lengthwise are by no means to be despised.

## HOW TO MOUNT THE WOODS

Our specimens should be as complete as possible—that is, the sections should be as large as we can obtain and conveniently store, but great size is not essential, and quite small sections a few inches square are quite large enough to show the characteristics and markings of the different woods. It is not necessary to mount the specimens, although, of course, the collection is much more presentable if every piece of wood is properly mounted.

It is necessary that we should be able to hold the wood up to the light and see its texture; but this may be easily done if we gum or glue the wood down upon a sheet of thick paper or card that has a neat oval opening cut in it, just like the opening in a mount for a photograph. In fact, if we can afford to buy them, photograph mounts, which may be purchased at any photographic shop and at most chemists' shops, would make admirable mounts for our wood.

We should see to it that, as far as possible, our specimens and their mounts are uniform in size, as they will look much neater if they are, and can be kept one above another in a box or letter-case. A fly-leaf of paper should be pasted on to each mount and folded over the specimen to keep it clean and undamaged. Upon this sheet, too, should be written the name of the tree from which the

wood comes, and the use to which the particular kind of wood is generally put. The more interesting and extensive the facts we can write down and keep attached to a specimen, the more valuable does it become.

## IMPROVING THE COLLECTION

To the clever boy or girl, many ways of improving the collection, both in appearance and in value, will occur. For instance, the mounts of the plain card or paper may be decorated in some neat way that will not distract attention from the specimen itself. Then, if we can obtain, in course of time, photographs or good printed pictures of the different trees represented in our museum of woods, the collection will be much more instructive.

It will be very interesting, too, if we live in the country, to have a collection within a collection, by keeping together specimens of the woods of the different trees that grow in our own neighbourhood. Then from time to time we can arrange our specimens round a room, and thus provide our friends with an entertaining exhibition. Trees that do not grow where we live, and whose woods we are unable to obtain locally, are often to be found in the districts where our friends live, and so, by getting these friends interested in our collection, we may obtain some new specimens from them. This is a specially good scheme if we have friends living abroad.

## SOME WOODS TO OBTAIN

Our woods should, of course, be classified—that is, arranged in a proper order, and the proper order is according to the families of the different trees. There are the conifers, or pine family. It includes the silver fir, a white deal used for floors, the Norwegian spruce fir, the ordinary white deal of the carpenters, Weymouth pine, used much by builders, the Scots pine, or yellow deal, the larch, used for house and boat building, and the well-known yew, formerly employed in the making of bows for our English archers.

Then there are the various kinds of leaf woods, as distinct from the woods of trees that have needle-shaped leaves, like the pines. These will be found much denser in texture than the wood of trees of the pine family.

There is the oak, the most useful of all our timber trees, the elm, a wood which is valuable on account of the fact that it will not split or warp, the ash, a tough, elastic wood, used much by carriage-builders and for oars, the wood of the various fruit-trees, such as plum, cherry, and chestnut, the beech, a very hard timber, the hawthorn, a reddish-white wood, the whitethorn, yellowish white in colour, the box and pear, used by engravers, maple, a reddish wood; sycamore, used for machinery and in the manufacture of charcoal, alder, another wood reddish in colour; walnut, willow, silver poplar, aspen, birch, elder, and hazel. All these have their own peculiar colours and markings and characteristics, and are well worth obtaining and keeping carefully in our timber collection.

# MAKING A COLLECTION OF WOODS

A GREAT deal of amusement and instruction is to be obtained from a collection of different kinds of woods, and such a collection it is within the power of each one of us to make. The woods of the different trees are wonderfully varied in weight and solidity and marking, and by preparing sections of these we have a collection that is pleasing to the eye and that need take up very little room in the house.

Sections of wood for our collection should be made *across* the trunk, and they should be thin enough for the light to pass through. With a little practice such sections can readily be sawn. A good saw is necessary, and if the wood be dry it should be damped, so that the different parts of the material may hold together and a smooth section be provided.

## WHERE TO OBTAIN SPECIMENS

Specimens for our collection may be obtained in different ways. Of course, if we live in the country, especially in the neighbourhood of woods where trees are being felled, we may get permission to take sections from the trees. But it is astonishing how many really excellent and serviceable specimens are to be obtained for nothing at all in saw-mills, timber-yards, cabinet-making establishments, carpenters' shops and so on. In fact, almost any place where different kinds of wood are used and dealt with is sure to provide us with some specimens, at any rate. While it is especially to be desired that our sections should be across the trunk of the tree, if this is difficult or impossible, sections cut lengthwise are by no means to be despised.

## HOW TO MOUNT THE WOODS

Our specimens should be as complete as possible—that is, the sections should be as large as we can obtain and conveniently store, but great size is not essential, and quite small sections a few inches square are quite large enough to show the characteristics and markings of the different woods. It is not necessary to mount the specimens, although, of course, the collection is much more presentable if every piece of wood is properly mounted.

It is necessary that we should be able to hold the wood up to the light and see its texture, but this may be easily done if we gum or glue the wood down upon a sheet of thick paper or card that has a neat oval opening cut in it, just like the opening in a mount for a photograph. In fact, if we can afford to buy them, photograph mounts, which may be purchased at any photographic shop and at most chemists' shops, would make admirable mounts for our wood.

We should see to it that, as far as possible, our specimens and their mounts are uniform in size, as they will look much neater if they are, and can be kept one above another in a box or letter-case. A fly-leaf of paper should be pasted on to each mount and folded over the specimen to keep it clean and undamaged. Upon this sheet, too, should be written the name of the tree from which the

wood comes, and the use to which the particular kind of wood is generally put. The more interesting and extensive the facts we can write down and keep attached to a specimen, the more valuable does it become.

## IMPROVING THE COLLECTION

To the clever boy or girl, many ways of improving the collection, both in appearance and in value, will occur. For instance, the mounts of the plain card or paper may be decorated in some neat way that will not distract attention from the specimen itself. Then, if we can obtain, in course of time, photographs or good printed pictures of the different trees represented in our museum of woods, the collection will be much more instructive.

It will be very interesting, too, if we live in the country, to have a collection within a collection, by keeping together specimens of the woods of the different trees that grow in our own neighbourhood. Then from time to time we can arrange our specimens round a room, and thus provide our friends with an entertaining exhibition. Trees that do not grow where we live, and whose woods we are unable to obtain locally, are often to be found in the districts where our friends live, and so, by getting these friends interested in our collection, we may obtain some new specimens from them. This is a specially good scheme if we have friends living abroad.

## SOME WOODS TO OBTAIN

Our woods should, of course, be classified—that is, arranged in a proper order, and the proper order is according to the families of the different trees. There are the conifers, or pine family. It includes the silver fir, a white deal used for floors, the Norwegian spruce fir, the ordinary white deal of the carpenters, Weymouth pine, used much by builders, the Scots pine, or yellow deal, the larch, used for house and boat building, and the well-known yew, formerly employed in the making of bows for our English archers.

Then there are the various kinds of leaf woods, as distinct from the woods of trees that have needle-shaped leaves, like the pines. These will be found much denser in texture than the wood of trees of the pine family.

There is the oak, the most useful of all our timber trees, the elm, a wood which is valuable on account of the fact that it will not split or warp, the ash, a tough, elastic wood used much by carriage-builders and for oars, the wood of the various fruit-trees, such as plum, cherry, and chestnut, the beech, a very hard timber, the hawthorn, a reddish-white wood, the whitethorn, yellowish white in colour, the box and pear, used by engravers, maple, a reddish wood, sycamore, used for machinery and in the manufacture of charcoal, alder, another wood reddish in colour, walnut, willow, silver poplar, aspen, birch, elder, and hazel. All these have their own peculiar colours and markings and characteristics, and are well worth obtaining and keeping carefully in our timber collection.

# MAKING A COLLECTION OF WOODS

A GREAT deal of amusement and instruction is to be obtained from a collection of different kinds of woods, and such a collection it is within the power of each one of us to make. The woods of the different trees are wonderfully varied in weight and solidity and marking, and by preparing sections of these we have a collection that is pleasing to the eye and that need take up very little room in the house.

Sections of wood for our collection should be made *across* the trunk, and they should be thin enough for the light to pass through. With a little practice such sections can readily be sawn. A good saw is necessary, and if the wood be dry it should be damped, so that the different parts of the material may hold together and a smooth section be provided.

## WHERE TO OBTAIN SPECIMENS

Specimens for our collection may be obtained in different ways. Of course, if we live in the country, especially in the neighbourhood of woods where trees are being felled, we may get permission to take sections from the trees. But it is astonishing how many really excellent and serviceable specimens are to be obtained for nothing at all in saw-mills, timber-yards, cabinet-making establishments, carpenters' shops and so on. In fact, almost any place where different kinds of wood are used and dealt with is sure to provide us with some specimens, at any rate. While it is especially to be desired that our sections should be across the trunk of the tree, if this is difficult or impossible, sections cut lengthwise are by no means to be despised.

## HOW TO MOUNT THE WOODS

Our specimens should be as complete as possible—that is, the sections should be as large as we can obtain and conveniently store, but great size is not essential, and quite small sections a few inches square are quite large enough to show the characteristics and markings of the different woods. It is not necessary to mount the specimens, although, of course, the collection is much more presentable if every piece of wood is properly mounted.

It is necessary that we should be able to hold the wood up to the light and see its texture, but this may be easily done if we gum or glue the wood down upon a sheet of thick paper or card that has a neat oval opening cut in it, just like the opening in a mount for a photograph. In fact, if we can afford to buy them, photograph mounts, which may be purchased at any photographic shop and at most chemists' shops, would make admirable mounts for our wood.

We should see to it that, as far as possible, our specimens and their mounts are uniform in size, as they will look much neater if they are, and can be kept one above another in a box or letter-case. A fly-leaf of paper should be pasted on to each mount and folded over the specimen to keep it clean and undamaged. Upon this sheet, too, should be written the name of the tree from which the

wood comes, and the use to which the particular kind of wood is generally put. The more interesting and extensive the facts we can write down and keep attached to a specimen, the more valuable does it become.

## IMPROVING THE COLLECTION

To the clever boy or girl, many ways of improving the collection, both in appearance and in value, will occur. For instance, the mounts of the plain card or paper may be decorated in some neat way that will not distract attention from the specimen itself. Then, if we can obtain, in course of time, photographs or good printed pictures of the different trees represented in our museum of woods, the collection will be much more instructive.

It will be very interesting, too, if we live in the country, to have a collection within a collection, by keeping together specimens of the woods of the different trees that grow in our own neighbourhood. Then from time to time we can arrange our specimens round a room, and thus provide our friends with an entertaining exhibition. Trees that do not grow where we live, and whose wood's we are unable to obtain locally, are often to be found in the districts where our friends live, and so, by getting these friends interested in our collection, we may obtain some new specimens from them. This is a specially good scheme if we have friends living abroad.

## SOME WOODS TO OBTAIN

Our woods should, of course, be classified—that is, arranged in a proper order, and the proper order is according to the families of the different trees. There are the conifers, or pine family. It includes the silver fir, a white deal used for floors, the Norwegian spruce fir, the ordinary white deal of the carpenters, Weymouth pine, used much by builders; the Scots pine, or yellow deal, the larch, used for house and boat building, and the well-known yew, formerly employed in the making of bows for our English archers.

Then there are the various kinds of leaf woods, as distinct from the woods of trees that have needle-shaped leaves, like the pines. These will be found much denser in texture than the wood of trees of the pine family.

There is the oak, the most useful of all our timber trees, the elm, a wood which is valuable on account of the fact that it will not split or warp; the ash, a tough, elastic wood, used much by carriage-builders and for oars, the wood of the various fruit-trees, such as plum, cherry, and chestnut; the beech, a very hard timber, the hawthorn, a reddish-white wood, the whitethorn, yellowish white in colour, the box and pear, used by engravers; maple, a reddish wood, sycamore, used for machinery and in the manufacture of charcoal, alder, another wood reddish in colour, walnut, willow, silver poplar, aspen, birch, elder, and hazel. All these have their own peculiar colours and markings and characteristics, and are well worth obtaining and keeping carefully in our timber collection.

# MAKING A COLLECTION OF WOODS

A GREAT deal of amusement and instruction is to be obtained from a collection of different kinds of woods, and such a collection it is within the power of each one of us to make. The woods of the different trees are wonderfully varied in weight and solidity and marking, and by preparing sections of these we have a collection that is pleasing to the eye and that need take up very little room in the house.

Sections of wood for our collection should be made *across* the trunk, and they should be thin enough for the light to pass through. With a little practice such sections can readily be sawn. A good saw is necessary, and if the wood be dry it should be damped, so that the different parts of the material may hold together and a smooth section be provided.

## WHERE TO OBTAIN SPECIMENS

Specimens for our collection may be obtained in different ways. Of course, if we live in the country especially in the neighbourhood of woods where trees are being felled, we may get permission to take sections from the trees. But it is astonishing how many really excellent and serviceable specimens are to be obtained for nothing at all in saw-mills, timber-yards, cabinet-making establishments, carpenters' shops, and so on. In fact, almost any place where different kinds of wood are used and dealt with is sure to provide us with some specimens, at any rate. While it is especially to be desired that our sections should be across the trunk of the tree, if this is difficult or impossible, sections cut lengthwise are by no means to be despised.

## HOW TO MOUNT THE WOODS

Our specimens should be as complete as possible—that is, the sections should be as large as we can obtain and conveniently store, but great size is not essential, and quite small sections a few inches square are quite large enough to show the characteristics and markings of the different woods. It is not necessary to mount the specimens, although, of course, the collection is much more presentable if every piece of wood is properly mounted.

It is necessary that we should be able to hold the wood up to the light and see its texture, but this may be easily done if we gum or glue the wood down upon a sheet of thick paper or card that has a neat oval opening cut in it, just like the opening in a mount for a photograph. In fact, if we can afford to buy them, photograph mounts, which may be purchased at any photographic shop and at most chemists' shops, would make admirable mounts for our wood.

We should see to it that, as far as possible, our specimens and their mounts are uniform in size, as they will look much neater if they are, and can be kept one above another in a box or letter-case. A fly-leaf of paper should be pasted on to each mount and folded over the specimen to keep it clean and undamaged. Upon this sheet, too, should be written the name of the tree from which the

wood comes, and the use to which the particular kind of wood is generally put. The more interesting and extensive the facts we can write down and keep attached to a specimen, the more valuable does it become.

## IMPROVING THE COLLECTION

To the clever boy or girl, many ways of improving the collection, both in appearance and in value, will occur. For instance, the mounts of the plain card or paper may be decorated in some neat way that will not distract attention from the specimen itself. Then, if we can obtain, in course of time, photographs or good printed pictures of the different trees represented in our museum of woods, the collection will be much more instructive.

It will be very interesting, too, if we live in the country, to have a collection within a collection, by keeping together specimens of the woods of the different trees that grow in our own neighbourhood. Then from time to time we can arrange our specimens round a room, and thus provide our friends with an entertaining exhibition. Trees that do not grow where we live, and whose woods we are unable to obtain locally, are often to be found in the districts where our friends live, and so, by getting these friends interested in our collection, we may obtain some new specimens from them. This is a specially good scheme if we have friends living abroad.

## SOME WOODS TO OBTAIN

Our woods should, of course, be classified—that is, arranged in a proper order, and the proper order is according to the families of the different trees. There are the conifers, or pine family. It includes the silver fir, a white deal used for floors, the Norwegian spruce fir, the ordinary white deal of the carpenters, Weymouth pine, used much by builders, the Scots pine, or yellow deal, the larch, used for house and boat building, and the well-known yew, formerly employed in the making of bows for our English archers.

Then there are the various kinds of leaf woods, as distinct from the woods of trees that have needle-shaped leaves, like the pines. These will be found much denser in texture than the wood of trees of the pine family.

There is the oak, the most useful of all our timber trees, the elm, a wood which is valuable on account of the fact that it will not split or warp, the ash, a tough, elastic wood used much by carriage-builders and for oars, the wood of the various fruit-trees, such as plum, cherry, and chestnut, the beech, a very hard timber, the hawthorn, a reddish-white wood, the whitethorn, yellowish white in colour, the box and pear, used by engravers, maple, a reddish wood; sycamore, used for machinery and in the manufacture of charcoal, alder, another wood reddish in colour, walnut, willow, silver poplar, aspen, birch, elder, and hazel. All these have their own peculiar colours and markings and characteristics, and are well worth obtaining and keeping carefully in our timber collection.



# MAKING A COLLECTION OF WOODS

A GREAT deal of amusement and instruction is to be obtained from a collection of different kinds of woods, and such a collection it is within the power of each one of us to make. The woods of the different trees are wonderfully varied in weight and solidity and marking, and by preparing sections of these we have a collection that is pleasing to the eye and that need take up very little room in the house.

Sections of wood for our collection should be made *across* the trunk, and they should be thin enough for the light to pass through. With a little practice such sections can readily be sawn. A good saw is necessary, and if the wood be dry it should be damped, so that the different parts of the material may hold together and a smooth section be provided.

## WHERE TO OBTAIN SPECIMENS

Specimens for our collection may be obtained in different ways. Of course, if we live in the country, especially in the neighbourhood of woods, where trees are being felled, we may get permission to take sections from the trees. But it is astonishing how many really excellent and serviceable specimens are to be obtained for nothing at all in saw-mills, timber-yards, cabinet-making establishments, carpenters' shops and so on. In fact, almost any place where different kinds of wood are used and dealt with is sure to provide us with some specimens, at any rate. While it is especially to be desired that our sections should be across the trunk of the tree, if this is difficult or impossible, sections cut lengthwise are by no means to be despised.

## HOW TO MOUNT THE WOODS

Our specimens should be as complete as possible—that is, the sections should be as large as we can obtain and conveniently store, but great size is not essential, and quite small sections a few inches square are quite large enough to show the characteristics and markings of the different woods. It is not necessary to mount the specimens, although, of course, the collection is much more presentable if every piece of wood is properly mounted.

It is necessary that we should be able to hold the wood up to the light and see its texture, but this may be easily done if we gum or glue the wood down upon a sheet of thick paper or card that has a neat oval opening cut in it, just like the opening in a mount for a photograph. In fact, if we can afford to buy them, photograph mounts, which may be purchased at any photographic shop and at most chemists' shops, would make admirable mounts for our wood.

We should see to it that, as far as possible, our specimens and their mounts are uniform in size, as they will look much neater if they are, and can be kept one above another in a box or letter-case. A fly-leaf of paper should be pasted on to each mount and folded over the specimen to keep it clean and undamaged. Upon this sheet, too, should be written the name of the tree from which the

wood comes, and the use to which the particular kind of wood is generally put. The more interesting and extensive the facts we can write down and keep attached to a specimen, the more valuable does it become.

## IMPROVING THE COLLECTION

To the clever boy or girl, many ways of improving the collection, both in appearance and in value, will occur. For instance, the mounts of the plain card or paper may be decorated in some neat way that will not distract attention from the specimen itself. Then, if we can obtain, in course of time, photographs or good printed pictures of the different trees represented in our museum of woods, the collection will be much more instructive.

It will be very interesting, too, if we live in the country, to have a collection within a collection, by keeping together specimens of the woods of the different trees that grow in our own neighbourhood. Then from time to time we can arrange our specimens round a room, and thus provide our friends with an entertaining exhibition. Trees that do not grow where we live, and whose woods we are unable to obtain locally, are often to be found in the districts where our friends live, and so, by getting these friends interested in our collection, we may obtain some new specimens from them. This is a specially good scheme if we have friends living abroad.

## SOME WOODS TO OBTAIN

Our woods should, of course, be classified—that is, arranged in a proper order, and the proper order is according to the families of the different trees. There are the conifers, or pine family. It includes the silver fir, a white deal used for floors, the Norwegian spruce fir, the ordinary white deal of the carpenters, Weymouth pine, used much by builders, the Scots pine, or yellow deal, the larch, used for house and boat building, and the well-known yew, formerly employed in the making of bows for our English archers.

Then there are the various kinds of leaf woods, as distinct from the woods of trees that have needle-shaped leaves, like the pines. These will be found much denser in texture than the wood of trees of the pine family.

There is the oak, the most useful of all our timber trees, the elm, a wood which is valuable on account of the fact that it will not split or warp, the ash, a tough, elastic wood, used much by carriage-builders and for oars, the wood of the various fruit-trees, such as plum, cherry, and chestnut, the beech, a very hard timber, the hawthorn, a reddish-white wood, the whitethorn, yellowish white in colour, the box and pear, used by engravers, maple, a reddish wood; sycamore, used for machinery and in the manufacture of charcoal, alder, another wood reddish in colour, walnut, willow, silver poplar, aspen, birch, elder, and hazel. All these have their own peculiar colours and markings and characteristics, and are well worth obtaining and keeping carefully in our timber collection.



# PROVERB GAMES FOR THE FIRESIDE

THERE are a number of interesting games with proverbs that will give much fun at an evening party or at any time that a number of friends are met together. We read of one such game on page 230, and there is another somewhat similar, in which the task set is for one player to guess a proverb that has been decided upon by the other members of the party who are present.

## CRYING PROVERBS

THE game of Crying Proverbs is played in the following way. One player retires from the room, while the others settle upon some proverb, and each takes one word of the sentence. Then the player outside comes in, and, at a signal, all the others call out their words at one moment. From this hubbub of mixed sounds the player from outside has to try to learn the proverb that has been selected. If at first he does not succeed, the proverb can be cried out again and again, until he does guess it or gives up in despair.

Of course, there are a number of points to be considered that add to the difficulty and consequently to the amusement of the game. It is better not to choose a proverb that has in it some distinctive key-word, for if the guesser hears this he is likely to answer correctly at once. For example, the word "broth" would at once suggest "Too many cooks spoil the broth." Then it is wise to choose a fairly long proverb, so as to have as many players as possible calling out the words, rendering the sounds the more confusing.

## ACTING PROVERBS

IN this game each player takes it in turn to be the actor, and he has to go through some actions which will suggest a proverb. The other players watch him, and try, from what they see him do, to guess his proverb. For instance, the action of sewing would suggest "A stitch in time saves nine." Carrying a

cup very carefully across a room would mean "A full cup must be carried steadily." A pebble rolled along on the ground, and then picked up and looked at as though something were expected to be found upon it, would be "A rolling stone gathers no moss." There is, of course, good scope for ingenuity here.

## PROVERB GAMES ON PAPER

THERE are several proverb games that are played with pencil and paper. A good game to play round the fire is for each player to write upon a slip of paper the vowels only of some popular and well-known proverb. The papers are then exchanged, and everybody has to try to discover the proverb of which he has only the vowels. Here is an example: *i e a o a a e a a i*. This looks rather formidable, but it is really the skeleton of the proverb "Give a dog a bad name and hang him." If this game is thought too difficult, we may play a similar game by taking well-known proverbs and omitting every other letter or every third letter.

Another similar game is to break up a short proverb into its letters and arrange these in alphabetical order, thus *d d e e e g i n n n o o s s w w*. If it is considered too difficult, one word may be given of the proverb as a key. For instance, in this example the word "weeds" might be given. The whole proverb is "Weeds need no sowing."

At a proverb party a good puzzle is this:

We is do  
This represents a well-known proverb in an abbreviated form. That will be a clever boy or girl who guesses the solution without having heard it before. The proverb represented is

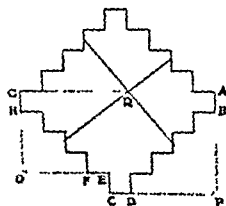
"Well begun is half done."

In all these proverb games it is essential that the proverbs chosen should be really popular ones that are quite well-known to most people.

## SOLUTION OF THE SQUARE PUZZLE ON PAGE 5112

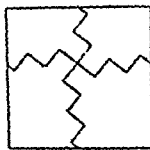
WE read on page 5112 how Kenneth was offered a prize by his father if he solved a curious puzzle. He

tried for a long time before he could do it, but just before bedtime came he was successful, and his father was very pleased. If we wish to do what Kenneth did, this is how we must proceed. Prolong the lines *A B* and *C D* to meet at the point *E*; and also the lines *E F* and *G H* to meet at *Q*. Then, along the line *A C*, measure *A K* equal to *B P*. If we now cut



How the square was made

along the straight lines *P R* and *Q R*, we shall have four pieces which fit together into a



square, as shown in the second diagram. The original figure was built up of rows of squares, beginning with a row of nine. The puzzle is solved in exactly the same way if we begin with a row containing any odd number of squares, the successive rows each containing two squares fewer than the previous row, so that we always arrive at a single square top and bottom.

## SOLUTIONS OF THE PLANT PUZZLES ON PAGE 5108

IN the botanical puzzle game on page 5108, descriptions were given of six different plants, and we had to name these plants of such varied characters, uses, and appearance.

from the descriptions given. The correct solutions are as follows: 1, Bladderwrack; 2, Mushroom; 3, Sweet scented vernal grass; 4, Hyacinth; 5, Wheat; 6, Coconut palm.

THE NEXT THREE TO MAKE, AND THE HINTS TO DO THEM, ON PAGE 5357

and the odours of the willows that dip into said waters, and the white clouds that float high over the giant trees

And I leave to children the long, long days to be merry in, in a thousand ways, and the Night, and the Moon, and the train of the Milky Way to wonder at, but subject, nevertheless, to the rights hereinafter given to lovers, and I give to each child the right to choose a star that shall be his, and I direct that the child's father shall tell him the name of it, in order that the child shall always remember the name of that star after he has learned and forgotten astronomy

I devise to boys jointly all the useful idle fields and commons where ball may be played, and all snow-clad hills where one may coast, and all streams and ponds where one may skate, to have and to hold the same for the period of their boyhood. And all meadows, with the clover-blooms and butterflies thereof, and all woods, with their appurtenances of squirrels, and whirling birds, and echoes, and strange noises, and all distant places which may be visited, together with the adventures there found, I do give to said boys to be theirs. And I give to said boys each his own place at the fireside at night, with all pictures that may be seen in the burning wood or coal, to

enjoy without let or hindrance, and without any incumbrance of cares

To lovers I devise their imaginary world, with whatever they may need, as the stars of the sky, the red, red roses by the wall, the snow of the hawthorn, the sweet strains of music, or aught else they may desire to figure to each other the lastingness and beauty of their love

To young men jointly, being joined in a brave, mad crowd, I devise and bequeath all boisterous, inspiring sports of rivalry. I give to them the disdain of weakness, and undaunted confidence in their own strength. Though they are rude and rough, I leave to them alone the power of making lasting friendships, and of possessing companions, and to them I give all merry songs and brave choruses to sing, with smooth voices to troll them forth

And to those who are no longer children, or youths, or lovers, I leave Memory, and I leave to them the volumes of the poems of Burns and Shakespeare, and of other poets, if there are others, to the end that they may live the old days over again freely and fully, without tithe or diminution, and to those who are no longer children, or youths, or lovers, I leave, too, the knowledge of what a rare, rare world it is

## THE MUSIC OF THE WILLING HEART

A POOR old fiddler was trudging late one night through Epping Forest, when a little man in a red cap met him

"I want you to come and play at a wedding dance," he said

"I'm sorry, sir," said the fiddler, "but I and my fiddle are too old for that sort of thing. What with my rheumatics and my broken instrument, I can only make such a screeching noise that people are glad to give me a penny to stop playing and go away"

"Never mind," said the little man "If you will only play with a willing heart, you'll play well enough"

He took the old fiddler to a lighted cave in the depth of the wood, and then led him down an underground passage, which opened out into a splendid hall. Hundreds of pretty little fairies came dancing with delight round the poor old fiddler, crying

"Do play us a waltz! We have

never heard a waltz! Do play for us!" Remembering that it was only a willing heart that they wanted, the old beggar put his old fiddle under his chin and began to play. To his surprise, his arm and fingers became as strong and supple as a young man's, and his broken fiddle gave out a tone of wonderful beauty. Rocking himself to and fro with joy at the fine music which he was making, he played for hours and hours without feeling the least fatigue, and when he had played every tune that he could remember, one of the fairies said

"Willing heart shall have a willing hand. Henceforward you shall always play as well as you played to-night!"

When the old fiddler woke up next morning, he found that he had become an excellent violinist, and that he had grown about forty years younger, while his cheap fiddle had turned into a magnificent violin with a splendid tone

## MORE ADVENTURES OF BRER RABBIT

### MR BUZZARD FOOLS BRER FOX

WHEN Mr Buzzard found that Brer Rabbit had got away, as we read on page 4643, he thought he'd stay by the hollow tree and get some fun out of Brer Fox. Very soon Brer Fox came running up with a great axe

"Old man Rabbit's lying mighty still in the hole," says Mr Buzzard, with a grin "I reckon he's taking a nap."

"Then I'm going to wake him up," says Brer Fox.

He flung off his coat, and grabbed the axe, and began to slash away like mad at the tree. And Mr Buzzard he just danced round and kept on shouting

"Go it, Brer Fox! Go it! You'll get old man Rabbit sure enough. You'll get him!"

Brer Fox he slashed away at the hole for all he was worth till he'd pretty well cut right through the tree.

"I'll have him," he cried, "if I have to tear the whole tree up!"

But as he stopped to get his breath, he saw old Mr. Buzzard quietly laughing behind his back, and he smelt a rat.



BRER FOX BEGAN TO SLASH AWAY LIKE MAD

"Just peep in the hole now, Mr Buzzard," says he, in a polite voice, "and see what old man Rabbit's doing."

Mr Buzzard came and put his head

right in the hole, and Brer Fox grabbed both his wings and held him down.

"Lemme go, Brer Fox!" says Mr. Buzzard. "Lemme go, I say, or Brer Rabbit'll get off!"

"You've been fooling me," says Brer Fox. "There's no rabbit in that hole!"

Mr Buzzard then told Brer Fox how Brer Rabbit had tricked him.

"That's neither here nor there," says Brer Fox. "I left you to watch this hole, and you went and let Brer Rabbit go, and then you went and fooled me. Now I'm going to make you pay for it!"

"Oh, please do let me go!" says Mr Buzzard. "My old woman's waiting for me."

"Your old woman can wait and wait," says Brer Fox, "but she's never going to see you again, for I'll finish you off right now."

With that he let go of Mr Buzzard's wings and grabbed him by the tail feathers, and tried to swing him up in the air and dash him to the ground.

But Mr Buzzard was beginning to moult, and his tail feathers came out in Brer Fox's paws, and he flew up above the trees quick as lightning and sailed off home. So Brer Fox was fooled again.

### MR BUZZARD SCARES BRER RABBIT

THE next morning Brer Rabbit met Mr Buzzard, and they got talking friendly together. Brer Rabbit told Mr Buzzard how he'd made Brer Fox his riding-horse, and Mr Buzzard told Brer Rabbit how he'd fooled Brer Fox.

"You're mighty clever, Brer Rabbit," says Mr Buzzard, "and I reckon I'm mighty clever, too. Suppose we go into partnership?"

Brer Rabbit agreed, and the two of them set to work, and at the end of a year they had got a good bit of money together. But when the time came to divide it, Mr Buzzard didn't get anything. All the money had disappeared.

Brer Rabbit made out that he was in a worse fix than his partner. Mr Buzzard said nothing, but he did a mighty lot of thinking. And one day he came and told Brer Rabbit that he'd found a gold-mine on the other side of the river.

"You come with me, Brer Rabbit," says Mr Buzzard. "I'll scratch out the gold, and then you can pick it up."

# MORE ADVENTURES OF BRER RABBIT

## MR BUZZARD FOOLS BRER FOX

WHEN Mr Buzzard found that Brer Rabbit had got away, as we read on page 4643, he thought he'd stay by the hollow tree and get some fun out of Brer Fox. Very soon Brer Fox came running up with a great axe

"Old man Rabbit's lying mighty still in the hole," says Mr Buzzard, with a grin. "I reckon he's taking a nap."

"Then I'm going to wake him up," says Brer Fox.

He flung off his coat, and grabbed the axe, and began to slash away like mad at the tree. And Mr Buzzard he just danced round and kept on shouting

"Go it, Brer Fox! Go it! You'll get old man Rabbit sure enough. You'll get him!"

Brer Fox he slashed away at the hole for all he was worth till he'd pretty well cut right through the tree.

"I'll have him," he cried, "if I have to tear the whole tree up!"

But as he stopped to get his breath, he saw old Mr. Buzzard quietly laughing behind his back, and he smelt a rat.



BRER FOX BEGAN TO SLASH AWAY LIKE MAD

"Just peep in the hole now, Mr. Buzzard," says he, in a polite voice, "and see what old man Rabbit's doing." Mr Buzzard came and put his head

right in the hole, and Brer Fox grabbed both his wings and held him down.

"Lemme go, Brer Fox!" says Mr Buzzard. "Lemme go, I say, or Brer Rabbit'll get off!"

"You've been fooling me," says Brer Fox. "There's no rabbit in that hole!"

Mr Buzzard then told Brer Fox how Brer Rabbit had tricked him.

"That's neither here nor there," says Brer Fox. "I left you to watch this hole, and you went and let Brer Rabbit go, and then you went and fooled me. Now I'm going to make you pay for it!"

"Oh, please do let me go!" says Mr Buzzard. "My old woman's waiting for me."

"Your old woman can wait and wait," says Brer Fox, "but she's never going to see you again, for I'll finish you off right now!"

With that he let go of Mr Buzzard's wings and grabbed him by the tail feathers, and tried to swing him up in the air and dash him to the ground.

But Mr Buzzard was beginning to moult, and his tail feathers came out in Brer Fox's paws, and he flew up above the tices quick as lightning and sailed off home. So Brer Fox was fooled again.

## MR BUZZARD SCARES BRER RABBIT

THE next morning Brer Rabbit met

Mr Buzzard, and they got talking friendly together. Brer Rabbit told Mr Buzzard how he'd made Brer Fox his riding-horse, and Mr Buzzard told Brer Rabbit how he'd fooled Brer Fox.

"You're mighty clever, Brer Rabbit," says Mr Buzzard, "and I reckon I'm mighty clever, too. Suppose we go into partnership?"

Brer Rabbit agreed, and the two of them set to work, and at the end of a year they had got a good bit of money together. But when the time came to divide it, Mr Buzzard didn't get anything. All the money had disappeared.

Brer Rabbit made out that he was in a worse fix than his partner. Mr Buzzard said nothing, but he did a mighty lot of thinking. And one day he came and told Brer Rabbit that he'd found a gold-mine on the other side of the river.

"You come with me, Brer Rabbit," says Mr Buzzard. "I'll scratch out the gold, and then you can pick it up!"

## GELERT, THE FAITHFUL DOG

**K**ING JOHN of England had not much affection to spare for anyone. But there were two beings he really loved—his beautiful daughter, Joan, and his splendid greyhound, Gelert. And when Joan married Llewelyn, the Prince of Wales, he gave them Gelert as a wedding gift. Prince Llewelyn was a great hunter, and he, too, soon got to love the noble hound sincerely.

The first day he took Gelert out with him, the greyhound chased a stag from Carnarvon to a rock—which is now called Beth Gelert—where the stag fell dead from exhaustion.

Gelert was always the first hound to appear when Prince Llewelyn blew his hunting-horn at the castle gate. But one morning the greyhound did not answer the call. Putting the horn to his lips, the prince again blew long and loudly, and then called, "Gelert, Gelert!" But the hound did not come, and, being unable to wait any longer, his master rode off to the hunt.

That day, however, he had little sport, for Gelert was not there. Tired, disappointed, and angry, he returned to his castle, and as he entered the gate the dog came bounding out with his mouth dripping with blood. There was a strange look in the eyes of the hound, which told the prince that something dreadful had occurred.

"Has he gone mad, and killed somebody?" he exclaimed.

A terrible suspicion flashed across his mind. Princess Joan had a little son a year old, and when Gelert was not out hunting he was always to be

found by the child's side. Prince Llewelyn rushed toward the room where his baby had been sleeping, and the hound followed him. A trail of blood led to the room. The prince drew his sword as he entered, and then recoiled in terror. There was a pool of blood on the floor, an empty, overturned cradle, and no sign anywhere of the child. Crouching down by the cradle, with a look of entreaty, Gelert began to whine.

Blind with rage, Prince Llewelyn turned upon him with uplifted sword, and thrust it through his heart, crying

"Monster, you have devoured my son!"

Giving a wild yell, the greyhound expired with his eyes fixed on his master's face. His dying yell was answered by a cry from beneath the cradle, and there Llewelyn found his little son unharmed, with its sleepy head resting on the body of a dead wolf. Now that it was too late, Llewelyn saw why Gelert had not come that morning when he sounded his horn. The wise and faithful hound had smelt out the wolf, and had fought and killed the fierce beast.

The prince was broken-hearted. "Although I cannot bring you to life, Gelert," said he, sadly, "I can keep alive the memory of your noble deed."

He buried the faithful dog by the rock where the stag that Gelert had chased from Carnarvon had fallen, and for hundreds of years people passing by the grave threw on it a stone, and the cairn they made is still called Beth Gelert, or the Grave of Gelert.

## LE MALIN FERMIER ET LE NAIN

THIS ENGLISH VERSION OF THIS STORY IS GIVEN ON PAGE 479B

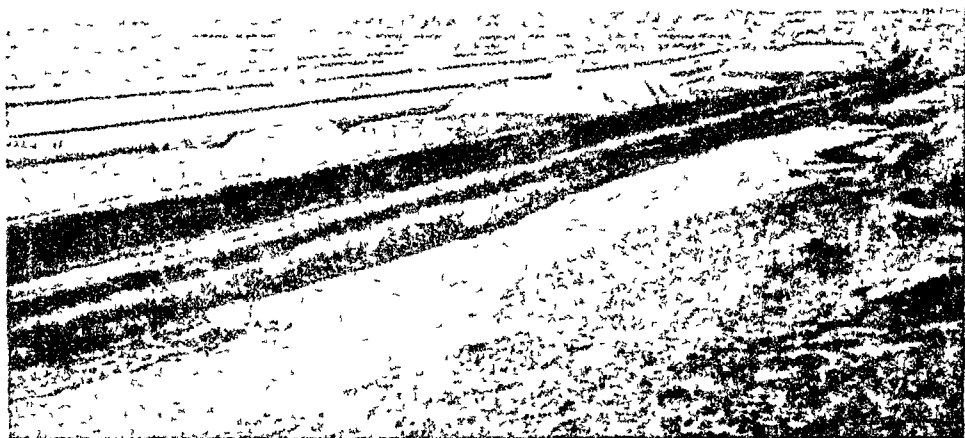
**U**N fermier qui possédait une petite colline sur ses terres, ayant décidé qu'elle ne devait pas servir à rien, se mit à la labourer. Aussitôt un nain qui l'habitait en sortit et, furieux, demanda au fermier de quel droit il osait déranger son repos en labourant le toit de sa demeure. Le fermier s'excusa humblement, mais remarqua qu'il serait dans l'intérêt de tous deux que la colline fût labourée et qu'on y récolte une moisson.

Le nain refusa d'abord, mais le fermier fit de son mieux pour le convaincre. Il proposa de tout faire

lui-même à la condition que le nain consentît à ce que, la première année, tout ce qui pousserait au-dessus du sol fût au fermier et tout ce qui serait dessous au nain, et la seconde année, ce qui serait au-dessous, au fermier, et au-dessus, au nain.

Le nain consentit à cet arrangement, mais le malin fermier planta du blé la première année et abandonna les racines au nain, tandis qu'il prenait le grain, et la seconde année, il planta des carottes, qu'il récolta en laissant au nain le feuillage inutile.

# THOUSANDS OF TONS OF TABLE-SALT



The snowy salt that fills our salt cellars on the dinner-table may have been dug out of the earth, or it may have been pumped from the earth in the shape of brine. This picture shows the wonderful Russian salt-field of Solnen, and, stretching away far into the background, we can see the vast tanks full of salt water, or brine.

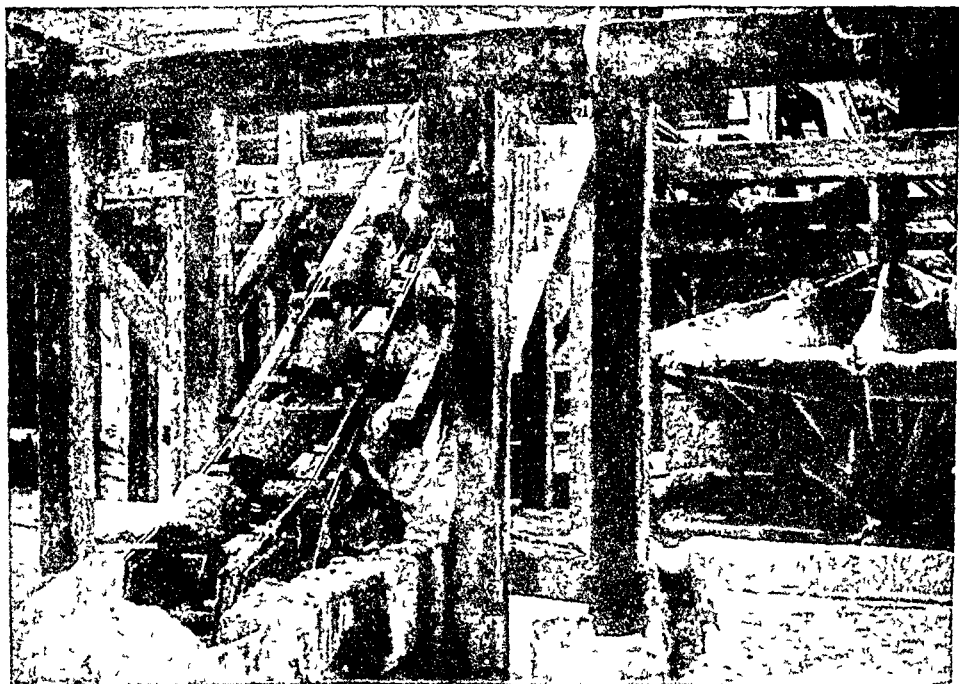


After a certain time the water in the tanks evaporates and leaves the salt glittering on the ground in the form of crystals. The salt-crystals are then collected and shovelled into heaps by women, as we see here, and these heaps are afterwards built into great white stacks containing hundreds of tons, like those shown in the top picture.

# MAKING 'THE SALT FIT FOR THE TABLE



When the water has been evaporated from the brine, the salt that is the result of this process is more or less coarse, and it is carted to the salt refinery, where the drying is completed and the crystals are ground by special machinery ready for the table. In this picture we see the mass of salt that is waiting to be refined.



Here is the scene in a salt refinery. The endless chain of buckets carries the damp salt to the drying-pans, from which it is removed for grinding. Then it is packed for the market. About two million tons of salt are eaten every year in the United Kingdom, and the average consumption is 32 pounds for each inhabitant.

The photographs on these pages are by Paul Géniaux, and Messrs Underwood and Underwood, London.



# GREAT POETS IN THE HALLS OF PRINCES



Here we see Virgil, the great Latin poet, who wrote the "Æneid" to glorify the Emperor Augustus, crowned with the laureate's wreath and seated in the house of Mæcenas, the wealthy minister of Augustus, while Virgil's friend and fellow-poet, Horace, recites one of his own beautiful poems to that great patron of the arts



To show his respect for Molière, the great French dramatist, who flourished in the age of Louis XIV, the king invited Molière to dine with him, while all his titled courtiers stood around, and thus did homage to the actor-dramatist whose fame endures when the artificial honours of these French nobles have all been forgotten



based upon his own observations and on what he was told. In this way he compiled the histories of many ancient wars, and descriptions of towns and nations that had disappeared long ages ago, and of which we might have known nothing but for his travels and investigations. He wrote these histories in a pleasant, unaffected, familiar style, which makes them alive with human interest, and though it has often been doubted whether his stories were to be believed, many of his most extraordinary statements have since been found to have at least some element of truth.

It is thought that Herodotus died about 425 years before Christ, perhaps in Southern Italy, where he had gone some time previously to take part in the founding of a new Greek colony.

Rome had become master of the world, when Publius Vergilius Maro, whom we know as Virgil, was born near the Italian town of Mantua, on October 15 of the year 70 before Christ. The Romans were now the all-conquering people, the warrior race of the world, but their culture and learning they had taken almost entirely from Greece.

**VIRGIL, THE AUTHOR OF THE "ÆNEID," THE FIRST OF THE GREAT LATIN POETS**

Virgil went up to Rome as a young man to study, but as his health was weak, and he lacked the confidence necessary for a speaker, he gave up thoughts of public service, and, returning to his country home, devoted himself to the study of the Greek poets. He achieved great fame by a series of pastoral poems modelled on the Greek poet Theocritus, and was befriended by the celebrated Mæcenas, the rich patron of all the poets of his day. Seven years of his life he devoted to his next great work—a series of four poetic books entitled "Georgics," which may be rendered in English as "The Art of Husbandry," dealing with all aspects of country life. These appeared in the year 30 before Christ, and established his fame as the greatest poet of his age.

The remaining years of his life were devoted to the writing of the great Latin epic poem known as the "Æneid," which he undertook at the suggestion of the Emperor Augustus, in order to glorify the legendary founder of the Roman nation, and the royal house from which the emperor was descended.

Æneas was one of the mythical heroes of Greek legend, a Trojan prince who escaped from Troy, as told in Homer's "Iliad," and it was Virgil's task to show how he had been the founder of the Latin nation. The story of the "Æneid" is told on page 542. Virgil died on September 21, 19 years before Christ, at Brindisi, in Italy.

**VIRGIL'S FRIEND HORACE, ANOTHER GREAT POET OF ANCIENT ROME**

One other poet of the ancient world must be mentioned. This was Quintus Horatius Flaccus, whom we know as Horace. He was born in Italy on December 8, 65 years before Christ, and died in Rome on November 27 of the year 8 before Christ. The father of Horace was a freedman, who had been able to send his son to Rome and afterwards to Athens for education.

It was at Athens that Horace was fired with thoughts of liberty, when he listened to a speech delivered by the famous Brutus, and he fought at the battle of Philippi, when the murderers of Cæsar were defeated by Antony and Octavian. He fled from the fatal field, and was afterwards glad to accept the patronage of those he had fought against, for in his poverty he turned to the writing of poetry, and Virgil, admiring his work, brought him to the notice of Mæcenas, whose bursary purse was at the service of the poet, and made him comfortable for the rest of his days. He received from this wealthy minister of Augustus a farm on the lovely Sabine Hills, not far from Rome, and in his poems he often sang of the delights of his pleasant life there.

**DANTE, THE GREAT ITALIAN, AND HIS WONDERFUL POEMS**

As Rome began to decline and, at the beginning of the fifth century of the Christian era, ceased to count as the greatest power in the world, the arts of literature and learning, which had been cultivated in her great days and carried on from the older times of Greece, almost went out, and ages passed before they revived. It was in the same fair land of Italy that the revival took place. What is known as the "Italian Renaissance," or re-birth, was heralded by the great poet Dante Alighieri, who was born at Florence in May, 1265.

Dante took a prominent part in the life of his native town, but in January,

high-sounding name of the Spanish writer whom we know simply as Cervantes. He was born in 1547, and died on April 23, 1616. He was only twenty-two when he wrote some pieces on the death of the queen of his land, and in the same year he went to Italy in the service of a cardinal, but soon enlisted as a soldier.

**THE ADVENTURES OF CERVANTES, THE SPANIARD WHO WROTE "DON QUIXOTE"**

Cervantes took part in the famous battle of Lepanto, where his left arm received injuries that rendered it useless for the rest of his life. But, despite this, he saw more fighting, was engaged against the Turks in Tunis, suffered five years of slavery under the Algerian pirates, and had many other adventures before he was done with soldiering.

Cervantes was nearly forty years of age when he married, and sought to support himself by writing for the stage, as he had already shown his literary power in a pastoral romance entitled "Galatea." His plays must have been fairly successful, for he wrote between twenty and thirty, of which only two are now preserved. In 1594 he was appointed collector of revenues for the kingdom of Granada, but three years later was imprisoned, owing to a shortage in his accounts. It is said, but it may be only a tradition, that it was while in prison he wrote the first part of the book by which his name became immortal, "Don Quixote," the story of which begins on page 843.

It is to the writers of the fair land of France we now must turn, and the first there to engage our attention was living at the same time as Cervantes.

**MONTAIGNE THE FRENCHMAN, WHO IS FAMOUS FOR HIS ESSAYS**

Michel Eyquem de Montaigne was surely an extraordinary boy, for until the age of six he spoke nothing but Latin, and every morning he was roused in bed to the strains of soft music. He was born on February 28, 1533, at his father's castle in Perigord, and when only six was sent to Bordeaux, where he remained for seven years, receiving the best education his time could offer. One of his tutors was a celebrated Scotsman, named George Buchanan, who was a professor at Bordeaux. The boy was studying for the law, but between the ages of

thirteen and twenty-four we know almost nothing about him. Then he appears again in Bordeaux, in a public post, and fills the position of a city councillor there for thirteen years.

Montaigne married at thirty-four, and after his two elder brothers had died he succeeded to his father's estates, spending the remainder of his life as a country gentleman of leisure, travelling often to foreign lands for his pleasure and instruction. It was in this leisured life that he began the writing of the essays for which he is famous, and there is, indeed, no pleasanter reading in all French literature than the charming little papers which he wrote as the mood came upon him, discussing all sorts of subjects and expressing his opinions in the most agreeable and elegant style of language. On September 13, 1592, he died at his castle in Perigord.

**MOLIERE THE ACTOR, WHO WAS THE GREATEST OF ALL FRENCH DRAMATISTS**

We have passed another century, and are in the Paris of Louis XIV, "the Grand Monarch," as he was called, when we make the acquaintance of the next great writer of France, Jean Baptiste Poquelin, known under his stage name of Molière. What Shakespeare is to England, Molière is to France. Unsurpassed as a writer of comedy even by Shakespeare himself, Molière is still the lesser dramatist, because he could not sound such depths of passion as Shakespeare does in "King Lear."

Molière was born in Paris on January 15, 1622, the son of a well-to-do furniture-dealer, and studied for the law, but early in life embarked on a theatrical venture, which, though it failed, made him an actor for the remainder of his days. He performed with his company in the provincial towns, and later was fortunate in receiving the patronage of the powerful Prince de Conti. The king himself was charmed with the gifted actor-dramatist, and delighted to honour him.

Molière thus became famous for the delightful comedies he wrote for his company of players, in which he himself usually played a part. It was after performing in one of his finest comedies, "The Imaginary Invalid," that he was taken ill and died at his house in Paris on February 17, 1673.

writing, he spent some years in study, and then began the most amazing career of any writer in history. Stories of all kinds—romances, plays, books of travel—flowed from his pen in a stream that seemed to be inexhaustible. Never had any one man showed such fertility of imagination, such ingenuity of invention, such boundless energy.

The fact was that Dumas was not only a genius, in whose mind revolved endless ideas for tales and romances, but he had the power to touch with his own individuality the work of others, and scores of lesser writers worked with him from time to time as his assistants.

Dumas was as kind-hearted and as prodigal as he was unscrupulous, and he had no sooner made a fortune than he contrived to get rid of it, so that when he left Paris for the last time, in 1870, and went to his son's villa near Dieppe, he was practically penniless. He died on December 5, 1870. His son wrote many novels and plays, and, taking a warning from his father, was very careful with his fortune.

#### GOETHE, THE MOST FAMOUS POET AND PHILOSOPHER OF GERMANY

From France we pass now to Germany, where, as culture had blossomed later than in the more western part of Europe, we do not find great writers until a later day. The first of world-wide fame is named Johann Wolfgang Goethe, and he was born on August 28, 1749, at Frankfurt-on-Main. He, too, in common with so many literary men of all lands, was trained for the law at the University of Leipzig, but had no taste for that profession, and later studied science and literature at Strassburg.

Poetry and the romance of legend attracted his mind most, and by degrees he came to shape his thoughts into poetic form, having attempted the writing of plays and songs before he was twenty years of age. It was through the study of other poets and the old ballads, such as Sir Walter Scott himself had rejoiced in, that Goethe was first led to writing about them as a critic, and later to producing great poems himself. The work by which his name is best known to English readers is "Faust," a great poetic drama which has been translated into most languages of the civilised world, and has thrilled the hearts and thoughts of generations.

His life was filled with the most fruitful activities, his friendships with the great men of his day are memorable, and the influence of his thought on the mind of Germany has been far-reaching and permanent. It was in 1775 that he was invited by the Duke of Weimar to stay in that town, and there he remained all the rest of his life, dying on March 22, 1832. Weimar is famous to-day because of Goethe, and because of the fact that the body of this great poet rests in the ducal vault beside that of Schiller, his friend and fellow-poet.

#### SCHILLER, THE GREAT DRAMATIC POET, WHO WROTE THE PLAY "WILLIAM TELL"

Johann Christoph Friedrich Schiller was the son of an army surgeon, and was born in Wurtemberg on November 10, 1759. He, too, became a surgeon to a Wurtemberg regiment, but early began the writing of plays, and had one produced in 1782. The Duke of Wurtemberg acted very tyrannically towards him, and prohibited him from writing other plays, as those petty dukes of Germany were able to do at that time. So Schiller fled from the duchy and wrote his plays elsewhere, and finally found himself at Weimar. His works have earned for him the position of the foremost dramatic poet of Germany, and perhaps his play that is best known to English readers is "William Tell."

Numerous versions of his poetry are to be found in English, just as with Goethe, and lives of him have been written by many authors, the most famous being that by Thomas Carlyle. His life was a long struggle against poverty, and he died at Weimar on May 9, 1805.

#### HEINE, THE GERMAN POET, WHO BORE HIS TRIALS WITH QUIET HEROISM

There remains but one more great name that need engage us, and it, too, has added to the lustre of German literature. Heinrich Heine was born of Jewish parents at Dusseldorf on December 13, 1797, and early in life turned to the writing of prose and poetry. His poems are touched with rare beauty, both of form and feeling, and he undoubtedly did much to ennoble and spiritualise the mind of the German people. His late years were passed on a bed of suffering, and nothing that he wrote distinguished him more than did the patience with which he bore his years of pain before death released him on February 17, 1856.

escape with him that very night, but when Richard eagerly asked "How?" he would not tell him, but only said:

"Eat up all your food; you will want all the strength you can get."

The day wore on, and as the hour of the banquet came, and the guests had entered through the gateway, the courtyard and the entrance and passages inside seemed quite deserted. Osmond opened the door of the room, looked down the winding stairway, and listened. Then, beckoning to Richard to follow him, they stole down the steps and across the courtyard, keeping in the shadows as much as possible.

Fortunately, Osmond knew his way to the barn even in complete darkness, and with the boy close at his heels he entered it, tore down a large truss of hay, snatched up a cord and bound the hay round the boy's body, so that no one would have dreamed there was

a small boy in the middle of it. Then very carefully he set the bundle against a wall and hoisted it on to his back.

"Be quiet. Don't make a sound," he whispered into the bundle.

Now came the dangerous part of the venture, for Osmond had to cross the courtyard in the moonlight to reach the stables.

When he arrived at the stables, he put his bundle down, saddled a horse, set little Richard free from the hay, and led the horse out through a side door. Then, keeping the boy up in front of him, he wrapped a big cloak round the two of them, and rode quietly through the streets of the town, and when the houses were left behind, galloped away with his precious charge, as we see in the picture on page 523. Little Richard lived to rule his dukedom and win the love and approval of the subjects whom he governed.

## THE WOMAN WHO

ONE day some poor children from the Southwark slums were being sent for a fortnight into the country, in connection with the Children's Holiday Fund. It was a touching sight. The chatter of little tongues, the patter of eager feet, the scramble into the carriages, the packing of bundles and baskets on the racks, elder sisters making babies comfortable in the corners, younger brothers clamouring to sit by the window, and all, great and small alike, telling in excited tones what they would do and where they would go.

Walking up and down on the platform, or gathered in knots about the doors, were the mothers—poor working women, who had snatched an hour from the factory or the wash-tub to see their dear ones off. Each child apparently had its parcel of food for the journey, and a copper or two to spend on arrival.

But there was one child there who had neither—a little girl. She sat on the edge of the carriage seat, her wistful eyes wide open, but neither a smile on her face nor a word of gladness on her lips.

Her forlorn appearance attracted the attention of one of the women outside, whose own child was near by, merry as a bird, one hand full of pennies, the other grasping a bag containing buns

## SOLD HER SHAWL

The sad white face of the little girl smote this good woman to the heart. Where was the poor child's mother, she asked, and had she no brothers or sisters, no pocket-money, no food? The child shook her head. Father was dead, mother could not leave her work, she had no brothers and sisters, and as for pocket-money and food, she simply spread out her empty hands. A companion had brought her to the station.

By this time several other people had gathered round, and many were the expressions of pity and concern. But the woman, whose shabby skirt and shawl proclaimed her extreme poverty, dashed a tear from her eye, and, saying "Wait a minute," hurried away.

Everyone had forgotten her, the guard was about to blow his whistle, and the train would soon be moving, when she returned, rushing along the platform, without her shawl, in search of the lonely child. In her hands were some pennies and a big bun.

"Hurry up, please!" cried the guard, holding open the carriage door; and the woman was just in time to place her gifts in the child's hands before the door shut with a bang and the train steamed away. She had sold the shawl from her ill-clad shoulders, so that the little girl might be happy like the others.

escape with him that very night, but when Richard eagerly asked "How?" he would not tell him, but only said

"Eat up all your food; you will want all the strength you can get."

The day wore on, and as the hour of the banquet came, and the guests had entered through the gateway, the courtyard and the entrance and passages inside seemed quite deserted. Osmond opened the door of the room, looked down the winding stairway, and listened. Then, beckoning to Richard to follow him, they stole down the steps and across the courtyard, keeping in the shadows as much as possible.

Fortunately, Osmond knew his way to the bairn even in complete darkness, and with the boy close at his heels he entered it, tore down a large truss of hay, snatched up a cord and bound the hay round the boy's body, so that no one would have dreamed there was

a small boy in the middle of it. Then very carefully he set the bundle against a wall and hoisted it on to his back.

"Be quiet. Don't make a sound," he whispered into the bundle.

Now came the dangerous part of the venture, for Osmond had to cross the courtyard in the moonlight to reach the stables.

When he arrived at the stables, he put his bundle down, saddled a horse, set little Richard free from the hay, and led the horse out through a side door. Then, keeping the boy up in front of him, he wrapped a big cloak round the two of them, and rode quietly through the streets of the town, and when the houses were left behind, galloped away with his precious charge, as we see in the picture on page 5223. Little Richard lived to rule his dukedom and win the love and approval of the subjects whom he governed.

## THE WOMAN WHO

ONE day some poor children from the Southwark slums were being sent for a fortnight into the country, in connection with the Children's Holiday Fund. It was a touching sight. The chatter of little tongues, the patter of eager feet, the scramble into the carriages, the packing of bundles and baskets on the racks, elder sisters making babies comfortable in the corners, younger brothers clamouring to sit by the window, and all, great and small alike, telling in excited tones what they would do and where they would go.

Walking up and down on the platform, or gathered in knots about the doors, were the mothers—poor working women, who had snatched an hour from the factory or the wash-tub to see their dear ones off. Each child apparently had its parcel of food for the journey, and a copper or two to spend on arrival.

But there was one child there who had neither—a little girl. She sat on the edge of the carriage seat, her wistful eyes wide open, but neither a smile on her face nor a word of gladness on her lips.

Her forlorn appearance attracted the attention of one of the women outside, whose own child was near by, merry as a bird, one hand full of pennies, the other grasping a bag containing buns

## SOLD HER SHAWL

The sad white face of the little girl smote this good woman to the heart. Where was the poor child's mother, she asked, and had she no brothers or sisters, no pocket-money, no food? The child shook her head. Father was dead, mother could not leave her work, she had no brothers and sisters, and as for pocket-money and food, she simply spread out her empty hands. A companion had brought her to the station.

By this time several other people had gathered round, and many were the expressions of pity and concern. But the woman, whose shabby skirt and shawl proclaimed her extreme poverty, dashed a tear from her eye, and, saying "Wait a minute," hurried away.

Everyone had forgotten her, the guard was about to blow his whistle, and the train would soon be moving, when she returned, rushing along the platform, without her shawl, in search of the lonely child. In her hands were some pennies and a big bun.

"Hurry up, please!" cried the guard, holding open the carriage door, and the woman was just in time to place her gifts in the child's hands before the door shut with a bang and the train steamed away. She had sold the shawl from her ill-clad shoulders, so that the little girl might be happy like the others.

escape with him that very night, but when Richard eagerly asked "How?" he would not tell him, but only said

"Eat up all your food, you will want all the strength you can get"

The day wore on, and as the hour of the banquet came, and the guests had entered through the gateway, the courtyard and the entrance and passages inside seemed quite deserted. Osmond opened the door of the room, looked down the winding stairway, and listened. Then, beckoning to Richard to follow him, they stole down the steps and across the courtyard, keeping in the shadows as much as possible.

Fortunately, Osmond knew his way to the barn even in complete darkness, and with the boy close at his heels he entered it, tore down a large truss of hay, snatched up a cord and bound the hay round the boy's body, so that no one would have dreamed there was

a small boy in the middle of it. Then very carefully he set the bundle against a wall and hoisted it on to his back.

"Be quiet. Don't make a sound," he whispered into the bundle.

Now came the dangerous part of the venture, for Osmond had to cross the courtyard in the moonlight to reach the stables.

When he arrived at the stables, he put his bundle down, saddled a horse, set little Richard free from the hay, and led the horse out through a side door. Then, keeping the boy up in front of him, he wrapped a big cloak round the two of them, and rode quietly through the streets of the town, and when the houses were left behind, galloped away with his precious charge, as we see in the picture on page 5223. Little Richard lived to rule his dukedom and win the love and approval of the subjects whom he governed.

## THE WOMAN WHO

ONE day some poor children from the Southwark slums were being sent for a fortnight into the country, in connection with the Children's Holiday Fund. It was a touching sight. The chatter of little tongues, the patter of eager feet, the scramble into the carriages, the packing of bundles and baskets on the racks, elder sisters making babies comfortable in the corners, younger brothers clamouring to sit by the window, and all, great and small alike, telling in excited tones what they would do and where they would go.

Walking up and down on the platform, or gathered in knots about the doors, were the mothers—poor working women, who had snatched an hour from the factory or the wash-tub to see their dear ones off. Each child apparently had its parcel of food for the journey, and a copper or two to spend on arrival.

But there was one child there who had neither—a little girl. She sat on the edge of the carriage seat, her wistful eyes wide open, but neither a smile on her face nor a word of gladness on her lips.

Her forlorn appearance attracted the attention of one of the women outside, whose own child was near by, merry as a bird, one hand full of pennies, the other grasping a bag containing buns.

## SOLD HER SHAWL

The sad white face of the little girl smote this good woman to the heart. Where was the poor child's mother, she asked, and had she no brothers or sisters, no pocket-money, no food? The child shook her head. Father was dead, mother could not leave her work, she had no brothers and sisters, and as for pocket-money and food, she simply spread out her empty hands. A companion had brought her to the station.

By this time several other people had gathered round, and many were the expressions of pity and concern. But the woman, whose shabby skirt and shawl proclaimed her extreme poverty, dashed a tear from her eye, and, saying "Wait a minute," hurried away.

Everyone had forgotten her, the guard was about to blow his whistle, and the train would soon be moving, when she returned, rushing along the platform, without her shawl, in search of the lonely child. In her hands were some pennies and a big bun.

"Hurry up, please!" cried the guard, holding open the carriage door; and the woman was just in time to place her gifts in the child's hands before the door shut with a bang and the train steamed away. She had sold the shawl from her ill-clad shoulders, so that the little girl might be happy like the others.

his young sister Tirzah had been sent Under a heavy guard, and subjected to the cruellest treatment, the youth was conveyed to the sea-coast, and in the villages through which he passed there was none of his own people who would venture to brook the anger of the Roman guards by giving him food and drink, much though they pitied him. Only in passing through the little town of Nazareth did a youth, who accompanied an elderly man carrying the tools of a carpenter, come forward with quiet fearlessness to the Jewish prisoner, and, looking upon him with infinite pity, give him a drink of water before the astonished guards could interfere.

#### A PRINCE OF JERUSALEM AS A SLAVE IN THE GALLEYS OF ROME

A galley-slave was usually worn to death in a year or so, but Ben Hur had not abandoned the hope that he might yet live to fight for the Lord of Israel, and even in the awful depression of his new life, chained to a bench in the galley, and tugging wearily at a heavy oar he clung to this hope. His shrewd mind told him that by changing from one side of the galley to the other he would better be able to stand the strain of the toil, and this change he contrived to effect so that he developed the strength and muscles of a giant, and became the best oarsman in the galley.

Three years had passed in this way, and never a word of kindness had the galley-slave heard, until it chanced that the *Astræa*, as the galley on which he served was named, was made the chief vessel of a fleet of one hundred assembled under the great tribune Arrius, to do battle with the pirates in the Ionian Sea. The attention of Arrius had been directed to Ben Hur, who was said to be the best rower on the galley.

#### HOW THE GALLEY-SLAVE BECAME A RICH PRINCE AGAIN

"From thy speech thou art a Jew," said the noble tribune to him.

"My ancestors further back than the first Roman were Hebrews," was the proud answer.

"I have not been to Jerusalem," Arrius went on, "but I have heard of its princes. I knew one, a merchant who sailed the sea. He was fit to have been a king. Of what degree art thou?"

"My father was a prince of Jerusalem, and as a merchant he sailed the seas. He

was known and honoured in the guest-chamber of the great Augustus. His name was Ithamar, of the house of Hur."

The tribune raised his hand in astonishment, saying, "A son of Hur—thou?" For it was to Ithamar he had alluded. The noble Roman then heard for the first time the true story of how Ben Hur had been condemned without a trial, and resolved to examine into this case. Meanwhile, the galley required the service of its best rower, and Ben Hur went back to his toil at bench number 60. In the battle with the pirates the *Astræa* was wrecked. Arrius would have drowned but for the help of Ben Hur, and out of gratitude for this service, and pity for the youth's wrongs, the tribune adopted the young Jew as his heir.

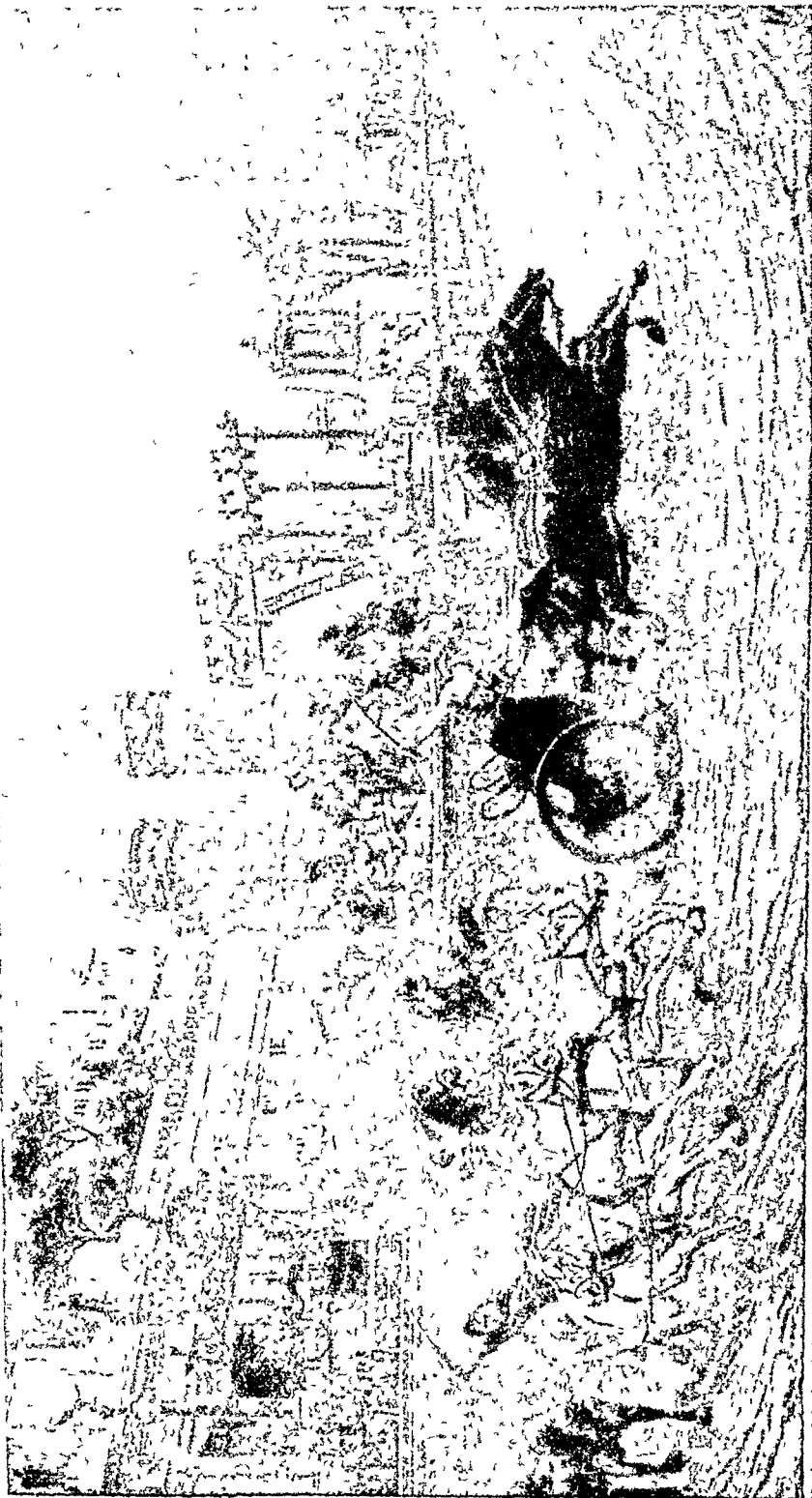
A new life opened out again for the son of Ithamar, and he now spent five years learning the art of war at Rome. Arrius had died within that time, and Ben Hur possessed his wealth. A great expedition was preparing to attack the Parthians in the East, and Ben Hur took service in this so that he might experience real warfare, and be the better able to help his countrymen some day to throw off the yoke of Rome.

#### BEN HUR FINDS AN OLD FRIEND AT ANTIOCH, AND HAS MORE GOOD FORTUNE

It was at the great and populous city of Antioch that the forces were being assembled, and thither Ben Hur went. Here, to his surprise, he found that the greatest merchant, whose ships crowded the harbour, was one Simonides, who had been his father's steward and slave, and, according to Jewish law, all that he possessed, including his own person, was the property of the son of Ithamar.

But in the mind of Ben Hur there was no thought of asserting his power over Simonides, and he sought him out solely to discover what had become of his mother and Tirzah. He found the merchant an aged man, broken in body, for he had been subjected to cruel torture by Gratus, when that tyrant had sought to make him disclose the sources of Ithamar's wealth. Simonides had defeated the designs of the Roman, and had employed his dead master's capital to such good purpose that he had become the richest merchant in all the world. When convinced that Ben Hur was

# A GREAT ROMAN CHARIOT RACE IN THE DAYS OF "BEN HUR"



Nothing delighted the people of Rome more than to watch the exciting chariot races that took place in the great arena of the city known as the Circus Maximus. Round and round the chariots went at a tearing pace, as seen in this picture, and often they would collide with one another, either by accident or by the design of the drivers, the horses and charioteers being killed, or crippled for life, as was Messala when Ben Hur deliberately upset his chariot. Ben Hur carried no whip, but steered his horses to victory by skill and strength.



and had been going about throughout Judæa teaching the common people to practise gentleness and mercy, to worship God in holiness, and to believe in Him and His son Jesus if they would be saved. The fame of His teaching had gradually spread to distant places, and although this was no princely conqueror, such as the Jews expected, there were already those who believed Jesus to be in very truth the Messiah.

Among these believers was Balthasar, whom Ben Hur met again on his way to look upon the Teacher he had worshipped as a babe. The young Jew accompanied the old man on his journey, and when he saw the Nazarene he recognised in Him the gentle face and pitying eyes that belonged to the little carpenter who gave him water to drink when the Roman guards were taking him to the galleys. Thrilled and fascinated though he was by this gentlest of teachers, he was not without a feeling of disappointment when he thought of all his preparations to raise an army that would fight with mortal weapons for the King of the Jews.

#### BEN HUR BECOMES A FOLLOWER OF JESUS OF NAZARETH

But from place to place he followed Jesus, observing Him closely, witnessing the miracles that He wrought, believing in Him, though still hoping that he might be called upon to fight for Him as an earthly prince, for he could not understand why the kingdom of Jesus was not of this world. So it came about that Ben Hur was one of the multitude that went up to Jerusalem with Jesus.

As they were passing the hill of the lepers two women ran down, and, throwing themselves at the feet of the Master, besought Him to make them clean. He saw Jesus bless them and tell them that their faith had made them clean, but, curious, and still a little doubting, Ben Hur lingered behind to see if it was even as the Master had said, and, behold, his mother and his sister stood before him restored to health.

It was required by the law that persons who had been cured of leprosy should tarry without the walls of Jerusalem for nine days before being allowed to return to their homes. Thus Ben Hur, who would not desert his mother and Tirzah during these nine days which they had to wait outside the city, was

not present at those world-moving scenes when the Jewish multitude, disappointed at not finding in Jesus the conquering prince of earthly power whom they had expected, had turned against the gentle teacher of humiliation and holiness. Nay, in that short time the rabble and the priests had hounded Him to death and drawn from the reluctant Pontius Pilate consent to His execution. Ben Hur would now have raised his carefully drilled legions to rescue Jesus, but too late he discovered that all but two of his recruits had joined in the hostile rabble.

#### THE LAST THAT BEN HUR SAW OF HIS LORD AND MASTER

Among the multitude that awful day when Jesus was crucified on the hill of Calvary, Ben Hur stood, in company with Simonides and Balthasar, all believers that the figure on the central cross was that of the true Messiah. So affected by the dreadful scene was Balthasar that, before the earthquake had come to strike terror through all that multitude, his spirit had taken flight to be with Him who perished on the Cross.

It was not many years after this greatest event in the history of the world that Ben Hur, who had married the daughter of Simonides, determined to use his riches in the cause of Christianity, to which Simonides also consecrated his vast wealth. At Rome the infamous Emperor Nero was now at the height of his short but awful reign of persecution, and, by wholesale slaughter, he sought to reduce the growing numbers of Christians throughout his dominions.

#### HOW BEN HUR HELPED TO BUILD THE CATACOMBS OF ROME

But in these days of persecution the Christians clung tenaciously to their faith, and near the city of Rome we can see to this day the wonderful catacombs, or underground cities, consisting of endless tunnels and cells, and even little chapels, in which, fleeing from the wrath of the monster emperor, the Christians lived and worshipped God hidden from the light of day.

To the construction of these catacombs the fortunes of Ben Hur and Simonides were devoted, and there are no memorials of the early Christians and their devotion to the teaching of Christ more eloquent than these ancient ruins.

from doing any great work or holding any honourable office if he were one of the people, he was deprived of citizenship, so that insults and cruelties could be heaped upon him without redress, if he were a slave, he would have to remain a slave all his life.

The churches were destroyed, the books of Christians were burned, and the Christians were not allowed to associate with their fellow-Christians for worship. Yet, in spite of this cruelty, in spite of seeing their fellows burned and tortured, the number of Christians increased all through those terrible seven years.

After this came an emperor named Constantine, who granted freedom to the Christians whom his predecessors had failed to destroy. A picture of Constantine appears on page 522. In a famous edict from Milan, in the year 313, he granted civil rights and toleration to all Christians throughout his vast empire.

#### THE WILD AND HANDSOME PEOPLE WHO LOVED THE MUSIC OF GALILEE

For many years the new religion prospered under this benign toleration, and revealed itself as a great world-movement, destined to alter the whole fabric of human life. But the successor of Constantine was Julian the Apostate, and once more, under the reign of this man, Christianity was vigorously opposed by the ruling power.

But a new power was appearing, a power which altered the face of the world. During the reign of Constantine there arrived at his capital city of Byzantium, which we now call Constantinople, a humble barbarian named Wulfila, or Ulphilas, to get learning and study men. Wulfila was a Goth, a member of a race looked down upon by all Romans as wild savages.

When Wulfila returned from Constantinople, it was as a convert to Christianity and as a Christian missionary to the Goths. To the savage and romantic Goths the ideas of Jesus were like some beautiful fairy-tale, some new light on life, some new music in the human heart. Before the end of the fourth century these barbarians, despised by Romans, were professed Christians.

From these handsome and simple savages, with the light of Jesus shining on their brows and the music of Galilee singing in their hearts, the vast empire

of Rome received its death-blow. The fall of the Roman Empire was not a sudden catastrophe, indeed, the word "fall" does not describe the facts of this immense event. Rome was, rather, gradually eaten up and absorbed by the Goths, and, in an equally gradual manner, Christianity grew and developed with this almost peaceful change.

#### THE TRIUMPH OF CHRISTIANITY OVER IGNORANCE AND BARBARISM

In the year 451 the Huns, under Attila, made a great attempt to shatter the empire and to destroy the new Christian civilisation with the sword of Tartar barbarism. This was the great decisive event for us and for our religion. Teuton and Tartar came face to face—the Teuton representing God, righteousness, learning, progress, and freedom, the Tartar representing the darkest and most ignorant barbarism. In that strife Christianity revealed itself as the world's conqueror. The future of the human race became Teuton, and under Teuton guidance it has advanced ever since.

How the brave missionaries carried Christianity far afield, how the Bishop of Rome was declared pope and endeavoured to rule the whole earth as a king, how Germany and England shook themselves free of this Italian domination, and how, all over the world, Christianity has ever since flourished where it was free, and decayed where it attempted to play the tyrant—this is a history we learn as we grow older, which will interest us to the end of our lives.

We shall find, as we grow interested in this story, that although Christianity is what it has always been, its followers have established many forms of worship, and built up many kinds of churches.

#### THE GREAT REVOLUTION THAT DIVIDED CHRISTIANS INTO TWO CAMPS

It is not for us here to consider these various churches, differing in many ways from one another, but all part of the Universal Church throughout the world. We may read here, however, the story of the great religious revolution which shook Europe 300 years ago, and divided Christians into two camps—the Roman Catholics, who acknowledge the authority of the Pope of Rome over all Christians, and the Protestants, who protest against any human being standing

between God and man. Because this great revolution has left such a mark in the world to-day, the story of it, and the story of the men who figured in it, may well be told in this place.

We speak of this religious revolution as the Reformation, because the result of it was to make the people of the northern half of Europe followers of the reformed religion instead of submitting any longer to the authority so long exercised by the Pope of Rome.

#### **MEN WHO LOVED THE TRUTH AND TRIED TO PURIFY THE CHURCH**

It was during the sixteenth century that the great change came over Europe, and the change began because men had some while before become displeased at the things which the clergy did and taught, and they came to think that much false teaching was caused by the mistake of believing in the great authority of the pope. Those who, in truth, began the Reformation tried at first to get the false teaching changed without any thought of breaking away from the one Church to which all Christian men belonged.

But when the pope and the great officers of the Church declared that these new doctrines were "heresies," and that those who would have them taught were heretics, making division in the Church, and must be punished even by being burnt at the stake—then these men stated that they would declare what they held to be true, whatever evil befell them, and that the pope, if he forbade the speaking of truth, was not God's servant, nor did Christian men owe him any obedience.

#### **JOHN WYCLIF, THE MORNING STAR OF THE REFORMATION**

The man who began to preach these things was a learned English priest named John Wyclif, who lived most of his life while Edward III. was King of England. He has been called "The Morning Star of the Reformation." It grieved him to see that so many of the clergy seemed to care little for the souls of the people, but very much for their own ease and power. So he sent out his disciples to preach the Gospel for the truth's sake, without earthly reward. He also set about translating the Scriptures so that the people could read them—the Bible having hitherto been printed only in

Latin for the learned to read; and he declared that the pope had nothing to do with the government of the people, but only with the saving of men's souls.

Now, this teaching made the rulers of the Church very wroth indeed, but it was pleasing enough to some of the great lords, such as John of Gaunt, and therefore they protected Wyclif from the bishops, who would have had him punished as a heretic. And so John Wyclif himself died in peace.

But after his death his disciples in England, who were called Lollards, from a word which means to chant or sing, were persecuted as heretics, and Wyclif's doctrines were declared by the pope to be heresies; and his body was taken from the grave and burned, and the ashes were cast into the river. Yet his doctrines had reached to other lands, and there arose in Bohemia a teacher named John Huss, who taught the things that Wyclif had taught, and many of the people of Bohemia believed these things and held them for truth.

#### **THE EMPEROR WHO BROKE HIS WORD AND COVERED HIS NAME WITH SHAME**

In those days there was held a great council at Constance, in Switzerland, to put an end to the quarrels that were going on as to which of two men who claimed to be pope was really pope. And Huss was bidden to come before this council to answer for his doctrines, yet he would not have gone, but that the Emperor Sigismund gave him a "safe conduct," which means a written promise that he should be suffered to come and to depart unhurt.

But the emperor, to his great shame, broke his promise, and as Huss would not recant—that is, confess that he no longer believed what he had been teaching, but would thenceforth declare it to be false—he was condemned to be burned, and not long afterwards a like fate befell his brave disciple and comrade, Jerome of Prague. However, the folk of Bohemia were very angry at these things, and would in no wise deny the truth of what Huss had taught them; and there followed long and fierce wars, in which the Hussites were often victorious under a commander named Zisca.

The evils that men saw in the rulers of the Church abated but little; yet those who desired better things increased in number. Famous among

these in the latter part of the fifteenth century was the Florentine friar, Girolamo Savonarola—of whom we read on page 3988—who, in burning words, called upon all men to repent, not sparing the pope himself in his reproofs. And Savonarola made so many folks wroth with him—among whom was the pope himself, Alexander VI, a very evil man—that he, too, was charged with heresy, and was sentenced to be strangled, and his body was burned.

#### JOHN COLET, WHO TAUGHT MEN TO STUDY THE BIBLE FOR THEMSELVES

Now, about this time there were many men who by their teaching sought to amend the manner of life of the lay-folk, but still more of the clergy, who were for the most part ignorant and full of vain superstitions.

The most famous of these teachers was wise John Colet. For he, having studied the Greek language, in which the Gospels and St Paul's Epistles were first written, taught the students who came to him to study the words of the evangelists and of the apostles themselves rather than the things that had been written or said about them by the learned men of after years, but besides this he founded the famous St. Paul's School, which was in the City of London until it was removed elsewhere not many years ago. There was nothing which helped so much to make men's minds eager for the Reformation as being trained to think and to study the Scriptures for themselves.

And yet good John Colet was not seeking to change the doctrines of the Church or its government, but only those wrong doctrines which were taught and believed among the ignorant.

#### SIR THOMAS MORE, WHO GAVE UP HIS LIFE RATHER THAN HIS FAITH

So it was, too, with another very wise Englishman, Colet's great friend, Sir Thomas More, whose head was afterwards cut off by Henry VIII, because he would not deny the pope's authority, yet, though Sir Thomas died for his loyalty to the old faith, there was no man in England who had done more to set men thinking in the very fashion which made them join the reformed religion.

But of all the men who helped to bring on the Reformation, yet drew back when it seemed to them that the coming change would be so great and so violent

that it would do evil rather than good, the most famous and the cleverest was Desiderius Erasmus, who also greatly loved Sir Thomas More, and was beloved by him. He was born in 1466 at Rotterdam, in Holland. It was meant that he should be a monk, and he was brought up among monks. Yet, though he became a priest, a monk he would not be, but spent his time in studying and lecturing and talking and writing.

His witty words threw scorn and contempt upon corruption and superstition, and all manner of folly, and his wise words taught men to understand the writings of St Paul and of the evangelists, and to put no more trust in the false interpretation of them.

Now we come to those other men who found that for them there was no other way than to set the pope and the papacy altogether at defiance, whatever it might cost them. And the greatest of them all was Martin Luther.

#### THE BOYHOOD OF MARTIN LUTHER, WHO DEFIED THE POPE

Luther was very humbly born, for his father was no more than a poor miner, yet, being a frugal man with a wise wife, and both of them God-fearing folk, they prospered enough to be able to send their son to school, which poor folk could not always do in those days. The boy, being clever, did so well in his studies that he hoped to become a lawyer, but his thoughts were turned more zealously to religion, as the story goes, by the sudden death of his dearest friend, who was struck by lightning.

Therefore he resolved to become a monk, thinking that it was only in the quiet of the cloister that a man could lead a truly spiritual and holy life. Then, as he was a very earnest student, he was chosen to be one of the teachers at the new university of Wittenberg, in Saxony, and there it was not long before men began to flock to his lectures and his sermons, as he said strange things that went home to people's hearts, for he loved truth and spoke it fearlessly.

But as yet he had not thought at all that any man would ever call him heretic; for there was nothing that he taught or believed which he had not found either in the words of St Paul or of the great Bishop St. Augustine, after whom the order of monks to which Luther belonged was named.

quarrel with Tetzel. But in some matters he departed from the Roman doctrine even more than Luther, so that Luther himself would not admit him to his friendship. However, the men who spread the reformed doctrine in England and Scotland were disciples of Zwingli rather than of Luther. He died as a soldier in defence of Zurich.

#### JOHN CALVIN, THE FRENCHMAN WHO RULED THE CHURCH IN SWITZERLAND

But soon afterwards there arose another champion of the Reformation, John Calvin, a Frenchman, who abode for the most part at Geneva, in Switzerland. The teaching of Calvin was very stern, and he ruled with a harsh discipline over the manner of life of his followers, and set up a new form of rule for the Church, not by bishops, but by presbyters, so that the name given to it is Presbyterianism. He, too, differed very much from Luther, and outside of England Protestants may generally be divided into Calvinists and Lutherans.

But in England the Reformation took a different way, for its leaders held that in rejecting the pope's authority they were in no wise ceasing to be a branch of the Catholic Church, but were just the branch which had freed itself from errors, and they suffered men to hold different opinions about many doctrines, so that some might incline towards Luther, and others towards Calvin, if, in their manner of worship, they gave heed to the ordinances of the Church as declared by the law. The man who did the most in making changes, and in checking them from being too great, was Thomas Cranmer, the Archbishop of Canterbury, who died at the stake in the reign of Queen Mary, as we read on pages 802 and 809.

#### JOHN KNOX, THE GALLEY-SLAVE, WHO LED THE REFORMATION IN SCOTLAND

In Scotland the Reformation was given its shape for the most part by the great disciple of Calvin, John Knox. He was a priest in the Roman Church when he was taught Luther's ideas by George Wishart, who became a Protestant martyr. By reason of his zeal and his powerful preaching, the Protestant Scots, who had rebelled and were besieged at St Andrews, took John Knox for their pastor. And so it was that when the French came to help the Regent Mary, they took St Andrews,

and John Knox was carried off as a prisoner, being then forty-two years old, and by them he was sent to the galleys for a time and afterwards removed to prison.

But when he was set free he returned to Scotland and from that time to the day of his death all the reformers looked to him as their guide. He was a stern man, hating all things that savoured of what he called vanity, and when the young Queen Mary came back to Scotland from France, he had no fear of reproving her and all her courtiers, as Elijah reproveth King Ahab, speaking words bold and bitter, because she was much given to gaiety, which he called "vanity," and because she was a Romanist.

Knox taught a stern religion, and made the Scots, who were ever a rough and hardy people, a sterner folk than before, but he wrought them great good, above all, by the care he took for the teaching of children all over the land. He died full of years and honours, and though for his hardness men scarcely love his memory, yet they still hold it in reverence.

Ever since those days the Protestant faith has held sway among us, though our land has been the home of men and women of every faith and worship.

#### THE INFLUENCE OF JESUS WHICH WE CAN ALL CARRY ON IN OUR LIVES

This story is now finished. We have read together the wonderful narrative of the Bible, the life of Jesus, the great story of St Paul, and we have seen how the ideas of Jesus, carried to Antioch and Rome by His servant Paul, opposed by all that hate, cruelty, and evil could do to destroy them, endured through the decay of the Roman Empire, and became the chief influence in the progress of the new world when the great empire of Rome had become but the shadow of a name.

For us who have followed this story it remains to carry on the work that began in Galilee, that Paul brought to Europe, and that men have built up through ages of suffering and toil. It is for us to carry forward the influence of Jesus by the gentleness of our lives, to spread goodness and hopefulness throughout the earth, to keep for ever shining in our lives, undimmed and unbroken, the beautiful Light of the World.

## THE BETTER LAND

Althou, h Mrs Hemans was a somewhat sentimental poet, and inclined to dwell too much on the gloomy side of life, a good many of her pieces are likely long to endure, and none more likely than this sonnet, which has been set to very appropriate music. The sentiment here is natural and unstrained, and, as it touches with dramatic intensity the longing of every feeling heart, it is no wonder that "The Better Land" has so long enjoyed popular favour.

I HEAR thee speak of the better land,  
Thou call'st its children a happy band,  
Mother! oh, where is that radiant shore?  
Shall we not seek it, and weep no more?  
Is it where the flower of the orange blows,  
And the fire-flies glance through the myrtle boughs?

Not there, not there, my child

Is it where the feathery palm-trees rise,  
And the date grows ripe under sunny skies?  
Or 'midst the green islands of glittering seas,  
Where fragrant forests perfume the breeze,  
And strange bright birds on their starry wings  
Bear the rich hues of all glorious things?

Not there, not there, my child

Is it far away in some region old,  
Where the rivers wander o'er sands of gold?  
Where the burning rays of the ruby shine,  
And the diamond lights up the secret mine,  
And the pearl gleams forth from the coral strand—

Is it there, sweet mother, that better land?

Not there, not there, my child

Eye hath not seen it, my gentle boy,  
Ear hath not heard its deep songs of joy;  
Dreams cannot picture a world so fair,  
Sorrow and death may not enter there,  
Time doth not breathe on its fadeless bloom;  
For beyond the clouds, and beyond the tomb,  
It is there, it is there, my child

## THE KING'S PICTURE

In this poem, by an American writer named Helen B Hoswick, we have a picturesque illustration of the old saying that there is some touch of good in all things, and that, even where we least expect it, some virtue may be found.

THE king from the council chamber  
Came, weary and sore of heart,  
He called to Iliff, the painter,  
And spoke to him thus apart  
"I'm sickened of faces ignoble,  
Hypocrites, cowards, and knaves;  
I shall shrink in their shrunken measure,  
Chief slave in a realm of slaves

"Paint me a true man's picture,  
Gracious, and wise, and good,  
Dowered with the strength of heroes  
And the beauty of womanhood  
It shall hang in my inmost chamber,  
That, thither when I retire,  
It may fill my soul with its grandeur,  
And warm it with sacred fire."

So the artist painted the picture,  
And it hung in the palace hall;  
Never a thing so lovely  
Had garnished the stately wall  
The king, with head uncovered,  
Gazed on it with rapt delight,  
Till it suddenly wore strange meaning—  
Baffled his questioning sight.

For the form was the supplest courtier's,  
Perfect in every limb,  
But the bearing was that of the henchman,  
Who filled the flagons for him,

The brow was a priest's, who pondered  
His parchment early and late,  
The eye was the wandering minstrel's,  
Who sang at the palace gate

The lips, half sad and half mirthful,  
With a fitful trembling grace,  
Were the very lips of a woman  
He had kissed in the market-place;  
But the smile which her curves transfigured,  
As a rose with its shimmer of dew,  
Was the smile of the wife who loved him—  
Queen Ethelyn, good and true

Then, "Learn, O king," said the artist,  
"This truth that the picture tells—  
That in every form of the human  
Some hint of the highest dwells;  
That, scanning each living temple  
For the place where the veil is thin,  
We may gather by beautiful glimpses  
The form of the God within."

## PLANTING THE APPLE-TREE

William Cullen Bryant, the American poet, was the author of these verses, which, in all likelihood, were suggested to him by his having himself planted an apple tree. The planting of any tree is a favourite subject of the poets, leading the mind in the most natural way to contemplate the continuous growth of the tree possibly for centuries after the hand that planted it lies still. Tree planters are at work all over the world, however, who never give a thought to the poetic side of their occupation, yet their labours are as suggestive of romance as any we can engage in.

COME, let us plant the apple-tree,  
Cleave the tough greensward with the spade,

Wide let its hollow bed be made;  
There gently lay the roots, and there  
Sift the dark mould with kindly care,  
And press it o'er them tenderly,  
As, round the sleeping infant's feet,  
We softly fold the cradle-sheet,  
So plant we the apple-tree

What plant we in this apple-tree?  
Buds, which the breath of summer days  
Shall lengthen into leafy sprays,  
Boughs, where the thrush, with crimson breast,  
Shall haunt and sing, and hide her nest,  
We plant, upon the sunny lea,  
A shadow for the noontide hour,  
A shelter from the summer shower,  
When we plant the apple-tree

What plant we in this apple-tree?  
Sweets for a hundred flowery springs  
To load the May-wind's restless wings  
When from the orchard-row he pours  
Its fragrance through our open doors;  
A world of blossoms for the bee,  
Flowers for the sick girl's silent room,  
For the glad infant sprigs of bloom,  
We plant with the apple-tree

What plant we in this apple-tree?  
Fruits that shall swell in sunny June,  
And redden in the August noon,  
And drop, when gentle airs come by,  
That fan the blue September sky,  
While children come, with cries of glee,  
And seek them where the fragrant grass  
Betrays their bed to those who pass,  
At the foot of the apple-tree

The fruitage of this apple-tree,  
Winds, and our flag of stripe and star,  
Shall bear to coasts that lie afar,  
Where men shall wonder at the view,

# AN INDIAN AT THE BURIAL-PLACE OF HIS FATHERS

William Cullen Bryant seeks in this fine poem to suggest the thoughts that come to a "noble red man"—as the Indian of America is sometimes, and not too truly, described—visiting the burial place of his fathers. The red man is a picturesque figure, but he is at best a savage, and the

peaceful peopling of his country by white men is a better thing than leaving it to the wild misrule of bloodthirsty tribes. The savage is an attractive creature in poetry and fiction, but the civilised man, with all his faults, does more to help the world along and promote the cause of humanity

It is the spot I came to seek—  
My father's ancient burial-place,  
Ere from these vales, ashamed and weak,  
Withdraw our wasted race  
It is the spot—I know it well—  
Of which our old traditions tell  
For here the upland bank sends out  
A ridge toward the river-side,  
I know the shaggy hills about,  
The meadows smooth and wide,  
The plains, that, toward the southern sky,  
Fenced east and west by mountains lie  
A white man, gazing on the scene,  
Would say a lovely spot was here,  
And praise the lawns, so fresh and green,  
Between the hills so sheer  
I like it not—I would the plain  
Lay in its tall old groves again  
The sheep are on the slopes around,  
The cattle in the meadows feed,  
And labourers turn the crumbling ground,  
Or drop the yellow seed,  
And prancing steeds, in trappings gay,  
Whirl the bright chariot o'er the way  
Methinks it were a nobler sight  
To see these vales in woods arrayed,  
Their summits in the golden light,  
Their trunks in grateful shade,  
And herds of deer, that bounding go  
O'er rills and prostrate trees below  
And then to mark the lord of all,  
The forest hero tramed to wars,  
Quivered and plumed, and lithe and tall,  
And seamed with glorious scars,  
Walk forth, amid his reign, to dare  
The wolf, and grapple with the bear  
This bank, in which the dead were laid,  
Was sacred when its soil was ours,  
Hither the artless Indian maid  
Brought wreaths of beads and flowers,

And the grey chief and gifted seer  
Worshipped the god of thunders here  
But now the wheat is green and high  
On clods that hid the warrior's breast,  
And scattered in the furrows lie  
The weapons of his rest,  
And there, in the loose sand, is thrown  
Of his large arm the mouldering bone  
Ah, little thought the strong and brave,  
Who bore the lifeless chieftain forth,  
Or the young wife, that weeping gave  
Her first-born to the earth,  
That the pale race, who waste us now,  
Among their bones should guide the plough  
They waste us—ay—like April snow  
In the warm noon, we shrink away;  
And fast they follow, as we go  
Towards the setting day—  
Till they shall fill the land, and we  
Are driven into the western sea  
But I behold a fearful sign,  
To which the white men's eyes are blind,  
Their race may vanish hence, like mine,  
And leave no trace behind,  
Save ruins o'er the region spread,  
And the white stones above the dead  
Before these fields were shorn and tilled,  
Full to the brim our rivers flowed,  
The melody of waters filled  
The fresh and boundless wood,  
And torrents dashed, and rivulets played,  
And fountains spouted in the shade.  
Those grateful sounds are heard no more,  
The springs are silent in the sun,  
The rivers by the blackened shore,  
With lessening current run,  
The realm our tribes are crushed to get  
May be a barren desert yet

## THE FLIGHT OF YOUTH

Nothing that the American poet, R. H. Stoddard, has written is more certain of remembrance than these beautiful lines from his pen. There is a glorious sense of life that comes to us all in our youth and makes us feel that life is immortal. As age creeps on this feeling wears away, and that is why the wise men say "If Youth but knew!" meaning that if youth had also the wisdom of age nothing would seem, and little would be, impossible.

There are gains for all our losses,  
There are balms for all our pains,  
But when youth, the dream, departs,  
It takes something from our hearts,  
And it never comes again

We are stronger, and are better,  
Under manhood's sterner reign;  
Still, we feel that something sweet  
Followed youth, with flying feet,  
And will never come again

Something beautiful is vanished.  
And we sigh for it in vain,  
We behold it everywhere,  
On the earth, and in the air,  
But it never comes again.

## QUIET WORK

These verses, by Matthew Arnold, take the form of a sonnet, or a little poem of fourteen lines, in which the reader will notice that the last six lines are not merely a continuation of the first eight, but they also contain a change of thought, which is proper to this form of verse

ONE lesson, Nature, let me learn of thee,  
One lesson which in every wind is blown,  
One lesson of two duties kept at one  
Though the loud world proclaim their enmity

Of toil unsevered from tranquillity!  
Of labour, that in lasting fruit outgrows  
Far noisier schemes, accomplished in repose,  
Too great for haste, too high for rivalry!

Yes, while on earth a thousand discords  
ring,  
Man's fitful uproar mingling with his toil,  
Still do thy sleepless ministers move on,

Their glorious tasks in silence perfecting,  
Still working, blaming still our vain turmoil,  
Labourers that shall not fail, when man is  
gone

## THE APPLE WINDS

These charming verses, by Mr. Will H. Ogilvie, convey a lesson worth remembering, for in our care-free days of youth we are apt to welcome the winds that blow us good without thought of those to whom they may blow ill. The verses are printed with Mr. Ogilvie's permission.

I HAD no thought of stormy sky  
In days when I was small,  
And all the world was bounded by  
Our ten-foot garden wall  
I never thought the storm winds came  
From wricks and ribboned sails,  
I never knew them by their name  
Of equinoctial gales,  
But sweeping round the orchard bends,  
Knee-deep in leaves of brown,  
I only knew them as the friends  
That shook the apples down!  
And I have travelled far and far  
And weary miles since then,  
And battled where the storm-winds are  
That wreck the lives of men,  
And back among the lime-tree leaves,  
Grown gold before they fall,  
I hear the song that autumn weaves  
When first the wild winds call,  
And though their hand is chill and cold,  
Their face has winter's frown,  
I know them for the friends of old  
That shook the apples down!

## I THINK WHEN I READ

few children's hymns are better known or more often heard in Sunday schools than this beautiful hymn by Mrs. Fulk.

I THINK when I read that sweet story of old,  
When Jesus was here among men,  
How He called little children as lambs to His fold—  
I should like to have been with Him then  
I wish that His hands had been placed on my head,  
That His arm had been thrown around me,  
And that I might have seen His kind look  
When he said:  
"Let the little ones come unto Me."  
Yet still to His footstool in prayer I may go,  
And ask for a share in His love,  
At last I thus earnestly seek Him below,  
I shall see Him and hear Him above,  
In that beautiful place He has gone to prepare  
For all that are wise and true and forgiven,  
And many dear children are gathering there,  
"For of such is the kingdom of heaven."

A flag as red as blood she showed,  
And she sped south right fast  
The last that sailed, her name was Faith,  
Slowly she took her passage forth,  
Tacked and lay to, at last she steered  
A straight course for the north.  
My gallant ships, they sailed away  
Over the shimmering summer sea;  
I stood at watch for many a day—  
But one came back to me  
For Joy was caught by pirate Pain,  
Hope ran upon a hidden reef,  
And Love took fire and foundered fast  
In whelming seas of grief  
Faith came at last, storm-beat and torn—  
She recompensed me all my loss,  
For, as a cargo safe, she brought  
A crown linked to a cross

## LIFE

Mrs. Barbauld, a well known writer in her day, whose poem "The Mouse's Petition" is printed on page 1855, was the author of these thoughtful lines, in which there is the quiet beauty of a contented and hopeful spirit.

LIFE! I know not what thou art,  
But know that thou and I must part,  
And when, or how, or where we meet  
I own to me's a secret yet  
Life! We have been long together,  
Through pleasant and through cloudy weather  
'Tis hard to part where friends are dear,  
Perhaps 'twill cost a sigh, a tear,  
Then steal away, give little warning,  
Choose thine own time,  
Say not Good-night, but in some brighter  
chime  
Bid me Good-morning

## GOD SAVE THE KING

Our "national anthem" is not poetry. Indeed, it is a pity that children should learn it and come to look upon it as a poem. It is the most doggerel. The second verse also, is the most blustering and quite unworthy of a great nation. Many attempts have been made to improve it, and we give here a new second verse that is sometimes sung by the school boys to sing the vulgar second verse of the original, which is not worthy of being reprinted in the *Children's Cyclopaedia*. We give the first and third verses, followed up by the suggested second verse, because it is probable that we should all know the anthem, however poor it is. The anthem is probably derived from an old French song and is believed to have been set to music, early enough, by John Bull, a musician and poet, who was a friend to King James I., and who died in 1633.

GOD save our gracious King  
Long live our noble King,



in Spain, but the day will come when it will be satisfied by something nobler than bull-fighting

This book may end, in the form in which we hold it in our hands, but the thoughts this book has put into our minds, the feelings that have grown, perhaps, in our hearts as we have read it, will remain and influence our lives. Of one thing let us be sure for ever—that goodness never ends, that all this beautiful world, this wonderful life of ours, was not created by God to exist for a few years and then to die. The changes of Nature are sometimes more than we can understand, and the last change that we know, the sleep that we call death, is the strangest of all. But it is a sleep, and not an end.

#### WHY IS FOOD DEARER AT SOME TIMES THAN AT OTHERS?

Food is of many different kinds, and some foods are affected by the season of the year, so, of course, we should expect to find that certain fruits and vegetables are dearer at some periods than at others, for sometimes they are in season, and are so abundant that they can be sold for little more than the cost of picking and carrying them, and at other times they have to be forced under glass, or brought long distances from warmer regions.

But other kinds of food often vary in their price, and if we wanted to know all the reasons of this, we should really have to study the question of cost and price, which is a very big matter. We can understand that supposing, for instance, Australia starts sending larger numbers of rabbits prepared for eating, or New Zealand starts sending greater quantities of mutton than usual to this country, the price of meat will fall because there is a greater supply of it, and the people who provide these things at home will have to lower their prices.

#### IS THERE A REASON FOR EVERYTHING?

It is indeed the first of facts that there is a reason for everything—for the existence of everything, and for everything that ever happens in the world. This has long been seen to be true of certain things, like the movements of water, the facts of chemistry, and even of plants. But it was long supposed that things were different in the outside world from what they were in the inside world, and men did not believe that

there were causes for all their thoughts and deeds, as well as for the falling of a raindrop. We are apt to be foolish in these matters, for we admit the cause of a thing when we see it; but when we do not see it we are apt to deny that a cause was there at all. The special word for causing is *causation*, and the first and greatest belief of science is that causation is universal, without any exception either in place or in time, either in the conduct of the weather or in the conduct of men. We are apt to take this for granted nowadays, as if it did not need saying, but it has taken all the thought and study of all past ages to prove, and the great majority of people, even to-day, do not realise that everything has a cause, and that consequences are endless. Every effect is the cause of further effects, and every cause or reason of things has its own cause or reason behind it. And so, if we think, we shall soon see that we must go back to the First Cause and All-Reason, the Cause of causes, whom men have come to call God.

#### HOW IS THE AREA OF A COUNTRY MEASURED?

The difficulty in measuring the area of a country depends entirely on the shape of it. There is never any difficulty in measuring the area of a thing so long as it is a rectangle in shape. *Rect* is simply the Latin form of right, and a rectangle is a thing, the angles of which are right angles. The simplest kind of rectangle is, of course, a square, but two opposite sides of a figure may be very much longer than the other two, and yet we still have a rectangle, if all the four angles are still right angles. These pages are rectangles, though they are not squares.

Now, nothing can very well be easier than to measure the area of this page or of a country which, like this page, is rectangular. If the rectangle be a square, we measure the length of one side and multiply the figure representing the number of miles by itself, and we have the area of the square in square miles. In the case of this page or any rectangle that is not a square, we multiply the length of one side by the length of a side next to it, and, if we are measuring in inches, that gives us the area in square inches. Of course, most countries are not

WHY CAN SOME WATERS PETRIFY WOOD?

The word petrify comes from a Greek word which means a rock, and that is also the meaning of the name Peter. If water petrifies wood, it must contain in itself something of the nature of stone or rock, and, in fact, stony material is actually laid down and left on the wood, which is therefore turned into something like stone or rock. The woody material itself may altogether disappear, but the tiny particles of stone are laid down just as the wood was. The water that can do this must be water containing various kinds of mineral matter dissolved in it in the form of salts. These salts may be of such a kind that when they are exposed to the air they change, and instead of remaining dissolved in water they become undissolved and turn solid, and are left behind.

The best example of such a salt is carbonate of lime, the common chalk that we all know so well. Chalk will not melt in water, but though carbonate of lime is insoluble in water, another salt, which is almost the same and is called bicarbonate of lime, melts in water quite readily. Now, if water with bicarbonate of lime dissolved in it runs over any surface exposed to the air, the bicarbonate is changed, because the extra quantity of carbonic acid from which it gets its name passes off into the air, and the salt left behind is carbonate of lime, or chalk, which is insoluble in water; and so this mineral matter is left behind, and will take any shape, according to the object upon which it is deposited.

WHY DOES A LAMP GIVE A BETTER LIGHT WITH THE CHIMNEY ON THAN OFF?

There are two good reasons for this, and at first they will sound, perhaps, as if they contradict each other. One reason is that the chimney protects the flame from draughts, and the other is that it makes such a good draught for the flame. We know, of course, how the flame of a match waves and winks, flickers, and then brightens up again, because of the draughts to which it is subjected. But if there are no draughts, it will burn more steadily. That is true of the candle flame also; and that is one use of the lamp-chimney. But the most important use of the chimney is that it helps to carry away

the burnt gases from the flame, which means that it makes a draught for fresh air to come in below and feed the flame. That is the great reason why the flame brightens up so much, and smokes so much less, when the chimney is put on. The reason why the flame smokes at first is that the oil is only being half burnt, the carbon in it is not being burnt at all, and forms the black specks that we see. But when the chimney is put on, the flame is much better fed with air, so that the burning goes on much more completely, and the carbon as well as the hydrogen in the oil is burnt up, most of the blacks disappear, and the flame burns brightly.

WHY DOES GRASS TURN YELLOW AFTER BEING MADE INTO HAY?

If there were no microbes in the world this would not happen, but nearly all the changes that happen in the bodies of living things after they die are due to microbes. This is as true of fish that turns bad as it is of grass that turns yellow when it is made into hay. Perhaps we are apt to forget that grass is part of the body of a living thing, but so it certainly is. It consists of those parts of certain plants which are called their leaves.

These leaves, like all other leaves, have the special duty of feeding on the carbonic acid of the air by the aid of sunlight, and for this purpose they contain a very wonderful chemical substance called *chlorophyll*, the colour of which is green. Like all other chemical compounds which are very complicated, chlorophyll is very easily broken up and changed into something else. On the other hand, most simple compounds, like water, are very stable.

When the leaves of grass die by being cut, the very first compound that suffers from the change is this delicate and unstable chlorophyll. It is broken up into compounds, some of which have a yellow colour. We see the same thing in the leaves of a tree in autumn, when the tree has deliberately killed by corking up the channels through which they got their food. The agents at work in all these cases are microbes, the sun, and the air, and water.

WHY HAS NOT SMOKE A FORCE LIKE STEAM?

The proper way to find out the answer to a question like this is first to discover what an *hypothesis* is. When

by studying the light of the aurora borealis, and we must do this by means of spectrum analysis. When that is done, we find that the light must have come from atoms of certain elements which form part of the air. These elements have only been known for a few years, and most of them were discovered by Sir William Ramsay. They mostly exist in the upper layers of air.

If we take a collection of these gases, and run some electricity through them, we find that they glow with certain beautiful colours which, indeed, make a very good imitation of the aurora borealis on a small scale. We are therefore inclined to believe that the aurora borealis must be due to electricity somehow exciting these gases as they exist in the upper layers of the air, and causing them to produce this glow.

#### WHERE DOES THE ELECTRICITY OF THE AURORA BOREALIS COME FROM?

We have lately learnt that all hot things give off tiny pieces of atoms, which are now called electrons, and which have powerful electrical properties. This is conspicuously true of the element carbon when it is made hot. Now, the sun is hot, and its outer part contains enormous quantities of carbon, so we may suppose that the aurora borealis is due to electrons from the sun striking the rare gases in the outer part of our atmosphere. But we cannot at all prove our theory unless we call in the help of certain other knowledge which we acquire in this book.

To begin with, how could the electrons get away from the sun? The sun's gravitation would tend to keep them, and if we are to believe that they are shot out from the sun, we must find something which will shoot them. Here our discovery of light pressure, or radiation pressure, comes to our aid. Without our knowledge of it we should have no right to say that electrons could leave the sun at all.

We cannot suppose that at all times electrons are being hurled in any quantity from the sun, and, indeed, we do not find that the aurora borealis is going on at all times. It is only sometimes, when things happen in the sun, and especially when there are many big sun-spots, that we find splendid auroras and also great disturbance of the magnetic needles on the earth.

It has long been known that auroras and sun-spots go together. Now we understand the reason. It is when something or other happens in the sun which makes the sun blaze up and increases the light pressure that electrons can be thrown from the sun in all directions, and some of them, after travelling ninety-three millions of miles at the rate of twenty miles a second, reach the earth.

#### WHY DO THE NORTHERN LIGHTS APPEAR IN THE NORTH?

When the electrons from the sun approach the earth, it seems as if they are conducted along certain lines, instead of just striking it fair and square. We must remember that the earth is a magnet. Now, if we take an ordinary bar magnet and a lot of iron filings, we find that in the space around the magnet there is what is called a magnetic field, and filings or any such things coming within this field will behave in a certain way. They will run towards the two poles of the magnet, and will arrange themselves between those poles in certain regularly curved lines, which are called the lines of force of the magnet, or the magnetic field.

Now, our study of Nature teaches us nothing more certainly than that size, as such, is of no importance. A magnet is a magnet whether it be a bar of iron an inch long or whether it be the earth on which we live, and what is true of one magnet is true of another. Therefore the magnet called the earth must and does behave towards the electrons coming within its field of force just as a child's small magnet will affect the iron filings coming within its field of force.

So we find that when the electrons approach the earth, they are carried towards the Poles of the earth, and those which travel through the outer air towards the North Pole, or, rather, towards the North Magnetic Pole, cause what we call the Northern Lights.

Thus we have an explanation, long sought for, of one of the most beautiful facts in Nature, and the special interest of the explanation is not only that it is new, but that it depends upon putting together our newly-gained knowledge of light and electricity and magnetism. No wonder, when none of these things were known, that men could not explain the cause of the aurora borealis.

the only explanation of its behaviour is that the earth itself is a huge magnet, and one end of the needle points to one Pole of the earth, and the other to the other, just as iron filings will behave in relation to the poles of a little magnet that we may hold in our hands. It may be asked. How is the earth like a horse-shoe magnet? But we must not be confused by the shape of such a magnet. It is really a bar of iron, one end of which is like the North Pole of the earth, and the other like the South Pole, and it is only bent into the horse-shoe shape for convenience.

We find that the magnetism of the earth does not quite run along the direction of the line joining the North and South Poles. The North Magnetic Pole of the earth is, therefore, not at the North Pole, though it is not very far distant from it, and the South Magnetic Pole, though near the South Pole, is not actually there. The compass-needle, therefore, does not point to the North Pole, but to the North Magnetic Pole, which is not due north.

#### HOW THE MAGNETISM IN THE SUN CHANGES THE WEATHER ON THE EARTH

Now, though it is a great advance that magnetism should have grown from being a scientific curiosity to teaching us that the earth itself is a huge magnet, yet that is not all. Just as our knowledge of electricity grew until we learnt that it exists throughout the universe, so our knowledge of magnetism has grown until we learn that we have to study it in the sun as well as on the earth.

It has long been known that there is some connection between happenings in the sun and the state of the earth's weather. It has been known, also, that sun-spots have some connection with magnetic needles on the earth. Now, it has been discovered quite lately that sun-spots are due to magnetism at work in the sun. When the light coming from sun-spots is very carefully studied by spectrum analysis, of which we read on page 2716, it is found that there are certain features of it which teach us that it is under the influence of magnetism. This helps us to understand why sun-spots and the disturbance of the magnetic needles on the earth should have something to do with each other. Thus

we begin to see how our ideas of magnetism are growing, and the very last

discovery made about this subject is particularly interesting to us, because it depends upon what we have lately learnt about light and light pressure, and about the fact that the earth is a magnet. That is the discovery about the aurora borealis, of which we read on pages 3858 and 5251. Let us now see what other great things we are able to learn from the study of electricity and magnetism.

#### THE ELECTRIC CURRENT THAT IS MADE UP OF WAVES IN THE ETHER

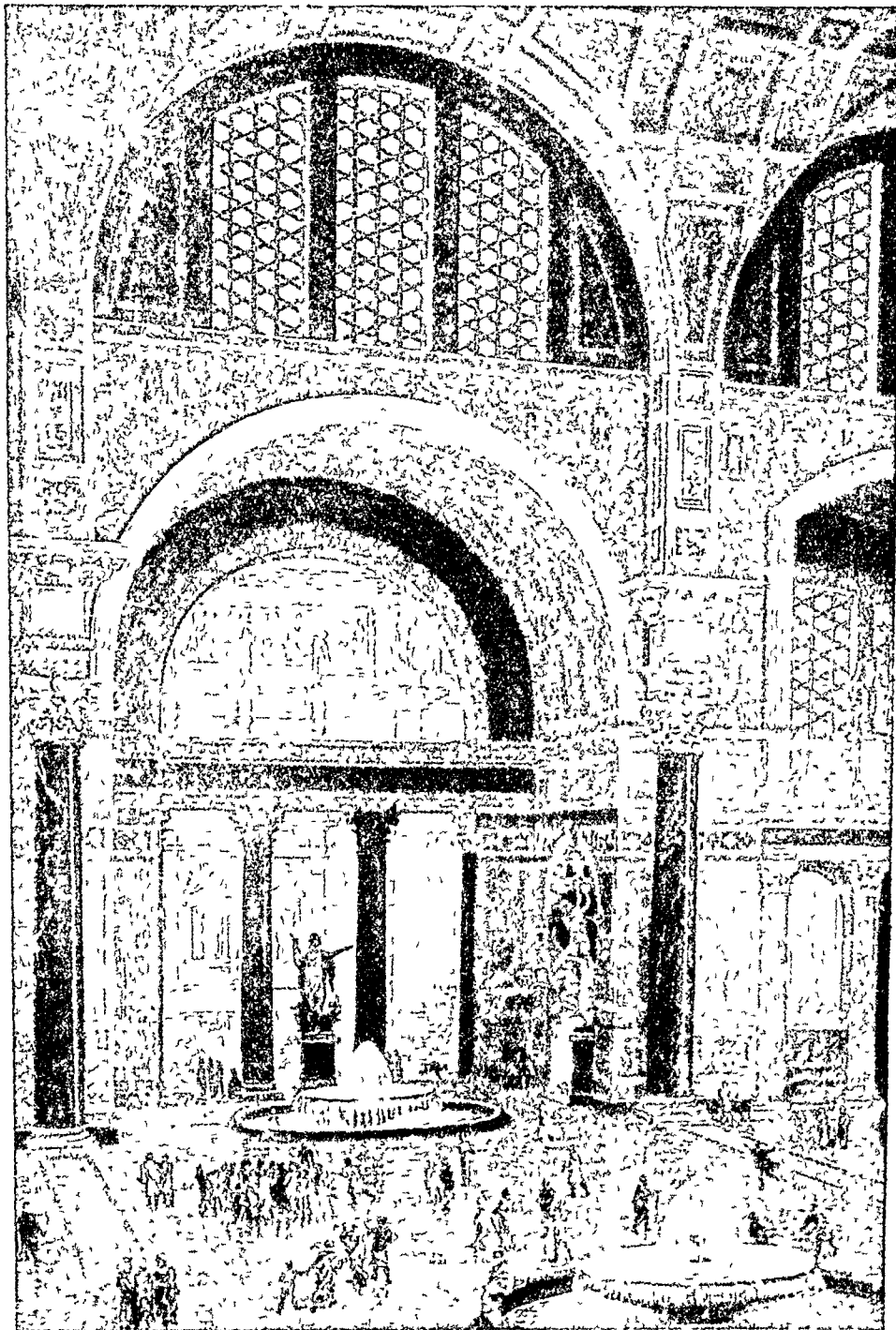
We know that light consists of waves of the ether, we know also that similar waves exist, forming a great scale, so to speak, above and below that part of the light scale which we can see. We know, further, that all these waves are really a kind of electric current, that they all travel at the same speed and have the same laws. They travel in the ether. We must clearly understand that all electric currents travel in the ether. They are ether waves, and that is equally true whether they are running through the air without wires, or through the ordinary electric wires that we find so useful for directing these currents.

It is one of the penalties of the increase of knowledge that old names come to get new meanings, and then we are liable to be confused. This is true in the case of electricity. One meaning of it is currents or waves existing in the ether, and we cannot understand that too clearly. But the word has now come to have another meaning, depending upon entirely new discoveries, and we must not be confused by it. In this sense of the word, we may now talk quite properly of atoms of electricity, provided that we are not confused by the new meaning of atom and by the new meaning of electricity.

#### THE WONDERFUL DISCOVERY THAT ALL THINGS ARE MADE OF ELECTRICITY

The old meaning of atom, which is still employed, is applied to those minute particles well known to chemists, which make up, say, gold or carbon or oxygen. The new discovery is that these things are made up of something else, and the something else of which they are made up produces electricity, and has all the properties of electricity, and can therefore only be called electricity. Matter when thus studied melts away, therefore, into a kind of power.

# THE WONDERFUL BATHS OF CARACALLA



The Romans, in the days of their wealth and luxury, spent much time at the public baths, and of all the magnificent buildings devoted to bathing, the baths of Caracalla, shown in this picture, were the most wonderful. Sixteen hundred people could bathe at one time, and the building measured nearly a mile round. The ruins are very impressive, and one writer has said that there is nothing in the world so grand as the remains of these baths.

to be copied from those of Greece. We have not yet a key to the language of their inscriptions. When these Etruscans are first heard of, they were far in advance of their Italian neighbours, making roads and canals, and building immense walls and towers for defence.

We do not know for certain when the Latins began to give up living in small villages consisting of groups of huts, which was the way of living of all the Italian tribes in the earliest days. By degrees they came to fortify a hill-top by building a wall, which made a safe refuge for a meeting-place. Finally, independent cities grew up, and often there was warfare with neighbours.

About fourteen miles from the mouth of the Tiber is a group of seven hills, one of which was thus chosen as a place of refuge. It became a city-state and was named Rome.

It has been said that the whole history of the world depended on the position of this group of hills. They are close together, and are near the sea. They are situated in the middle of Italy, and in the middle of Europe as it was known in ancient times, and also near the middle of the Mediterranean Sea, once the world's great, busy highway.

#### HOW THE BEGINNING OF ROME IS LOST IN THE MISTS OF THE PAST

We do not know when the foundation of Rome took place, some say 753 years before Christ, at the time when the "sons of Asshur" were so powerful in Assyria, and Egypt had already passed its greatest glory. The later Romans reckoned their years from the date of the founding of the city, as we do ours from the birth of Christ. In all countries it is very difficult to say when the old legends of beginnings end and the certain facts of history begin.

A race like the Romans, who rose to such immense power, naturally liked to feed their national pride by believing they were descended from gods and heroes, wonderful legends arose about their origin, and in process of time these were so grandly told by poets and historians that the world refuses even now to give up the attractive beliefs of long centuries. We are led very willingly back again to the siege of Troy, which scholars now place earlier than a thousand years before the birth of Christ, and watch its bitter ending for

Priam and his family and friends. Æneas, whose father was Anchises, one of the Trojan heroes, and whose mother was the goddess of love and beauty, escaped from the dreadful slaughter, carrying his old father on his back.

After many thrilling adventures in the Mediterranean, including a visit to the Phœnician colony of Carthage, in which his goddess mother gave him much help, Æneas found his way to the west coast of Italy, where he married the daughter of the king of the country, named Latinus, and peaceably succeeded him as king of the Latins.

#### THE STRANGE STORY OF ROMULUS, THE FOUNDER OF ROME, AND THE WOLF

Many generations after, one of the daughters of the royal house had twin sons. Their father was the god of war. They grew up to strong manhood in spite of efforts to destroy them by casting them out upon the Tiber. A she-wolf nursed the boys till a shepherd found them and brought them up. They were named Romulus and Remus. Romulus succeeded in founding a colony and city on one of the group of seven hills near the mouth of the Tiber. This was the famous Palatine Hill, and this was the beginning of Rome.

The old stories give wonderful details of how the first Romans obtained their wives from the Sabine people living on another hill of the group, called later the Quirinal Hill, by running away with them at a joint festival. However this may be, the fact remains that one by one the seven hills were absorbed into one great walled city, made up of hills and valleys, green fields as well as dwelling-houses, with a fort on the Capitoline Hill. The Romans ever welcomed strangers to live within their safe enclosure, and traded with their neighbours round, they also fought continually with these neighbours, especially with the Etruscans, who, besides being foes, were the teachers of the Romans.

#### THE WALLS OF ROME, WHICH ENCLOSED A STATE AS WELL AS A CITY

Many and interesting are the glimpses given us of Rome in its cradle, in the story of the rule of the kings who succeeded Romulus, lasting about 250 years. We see the sober, hard-working peasants, developing by their patient toil qualities that made their race the best soldiers in the world. Marvellous

In the year 300 before Christ, the tall and terrible Gauls, with their fair hair and flashing eyes, came down upon Rome itself, as we read on page 606, after defeating a Roman army of 40,000 men. We are told that "their harsh music and discordant clamours filled all places with a horrible din," and their long swords cut through the helmets of the Romans, making them flee in terror and panic.

No one thought of defending the walls of the city, the Capitol fortress on the Capitoline Hill alone held out, as we read in the story of the Sacred Geese, on page 606, and the white-bearded priests sat like statues in the Forum of the deserted city. The Gauls killed the priests, set fire to the city, demanded a heavy ransom, and departed. In this fire the city records perished, and with them all that would have given us actual facts about the thrilling story of the past.

#### HOW THE ROMANS LEARNT TO FIGHT AGAINST ELEPHANTS AND WON ITALY

The Romans learnt much from their war with the Gauls, and steadily pursued their conquests over the rest of the states of the peninsula. After settling with the brave Samnites and the Etruscans, they had long wars with the Greek cities in the South. One of these was Tarentum. The people were one day sitting in an open-air theatre, like the one in Athens, listening to one of the splendid Greek plays, when they looked up, they saw the Roman ships sailing close to their harbour. So the war began, and they asked Pyrrhus of Greece to help them. It took the Romans five years to win.

As the war went on they learnt some useful lessons, understanding how to fight against elephants and how to improve their cavalry. When Pyrrhus had gone home, in the year 274 before Christ, after losing nearly all his troops, all the peninsula of Italy had passed to Rome. The splendid Greek cities of the South furnished beautiful works of art, and many articles of luxury hitherto almost unknown to the victors.

We see in the story of modern Italy, that begins on page 3011, how difficult the long, narrow country has always been to govern from one centre. The Romans had two plans by which to hold their conquests, and with these we are already familiar, because they were the same as were used in Britain. Colonies were founded, in which Roman citizens,

who never forgot Rome, were sent to live and work, and teach others to do the same. Also fine roads were made to connect the colonies and the camps of the soldiers with the capital, along which roads troops could travel quickly and trade routes could be established.

#### A NAVY THAT WAS COPIED FROM A WRECK, AND SAILORS WHO ROWED IN SAND

Soon after Pyrrhus had returned home, the tremendous wars between Rome and Carthage began. We read on page 5122, in the story of Greece, that Carthage was a colony of Phœnicia, and these wars are generally called the Punic, or Phœnician, wars. The western half of the north coast of Africa had been conquered by the Carthaginians, but the natives had not been well treated by them, so when they had to serve in the armies of their conquerors, they had none of the enthusiasm for their cause which the Roman soldiers had for theirs—they cared only for their pay.

The war began in Sicily, the lovely island midway between Rome and Carthage, and the Romans soon found that they must have a navy. With great courage and energy they set to work building ships, taking a stranded Carthaginian vessel as a model. While the sawing and hammering were going on, crews were in training, sitting on benches on the shore, practising rowing in the sand.

Great was the enthusiasm in Rome when the first naval hero returned after the first sea victory, which was gained at Mylæ, in the year 260 before Christ. But there were many ups and downs in the campaign. The great Roman fleet which was afterwards built defeated the enemy and carried to Africa an army which, under Regulus, had much success, till the splendid cavalry and the huge elephants of the Carthaginians turned the tide of war once more. We read the story of the bravery of Regulus on page 2133.

#### THE DELIGHT OF THE PEOPLE WHEN ELEPHANTS FIRST WENT TO ROME

In a later fight, 120 of the "huge, earth-shaking beasts" were taken and sent to Rome, to the great delight of the people, who had never seen elephants before. After twenty-three years of fighting, the first Punic war came to an end, peace being made by that most gallant general and wise man, Hamilcar, who was able to see when it was time

to give in. Sicily was made a Roman province some years later, and then Sardinia and Corsica also became provinces.

Hamilcar had a son who was a great general, too. This was Hannibal. We are told that he worked day and night, and thought only of sleep when there remained nothing else that could be done.

#### HANNIBAL'S TERRIBLE MARCH ACROSS THE ALPS

After a useful campaign in Spain, where his father had been so successful in forming a province, he made one of the great marches of history. Leading his army of 50,000 foot soldiers and 10,000 horsemen, with numbers of elephants, he passed northward along the east coast of Spain, by the eastern "gate" of the Pyrenees, round the Gulf of Lions, across the swift Rhone, and then over the Alps themselves to the plains of North Italy. So rapid was his march that at every spot where the Romans had hoped to stop him they always arrived too late.

It is a pitiful thing to remember the lives that were sacrificed on the slippery, icy paths and the steep mountain-sides of the Alps. The cold was intense, and the people of the country rolled down great boulders on them, and attacked them from behind, just as the Swiss treated the Austrians many centuries later.

Before long all the valley of the Po was conquered by Hannibal, and he marched triumphantly down the peninsula, through Etruria, taking the Romans by surprise in the mist of the morning on Lake Trasimene. A great attempt to get rid of Hannibal was made the next year at Cannæ, where all the best Roman soldiers were killed. In the British Museum, among many specimens of Roman armour of different periods, is a helmet found at Cannæ.

#### THE DESTRUCTION OF CARTHAGE AND THE CONQUEST OF GREECE

But the Romans, as usual, learnt much from defeat, and they patiently waited until at last the great Scipio drove the Carthaginians out of Spain, and then beat them in Africa, so that they had to send for Hannibal to come home. In the year 202 before Christ, Scipio destroyed, at Zama, near Carthage, the army that had harassed Italy for sixteen years.

Rome was now the chief state in the West, and was supreme, owing to her ships, in the Mediterranean. The time

had now come to turn her face eastwards. There had been a conflict with Macedonia during the second Punic war, and when that mighty struggle was finished, the Roman legion and the Macedonian phalanx—the light, easily-turned troops, and the solid body of bronze-clad warriors—met in Thessaly. The legions were successful, and passed on, after a time, to set foot in Asia, where they won a tremendous victory at Magnesia under the brother of the great Scipio, who had, after his successes in Africa, been given the name of Africanus. A terrible battle at Pydna, in Macedonia, settled the fate of the country in the year 168 before Christ.

In the same year Rome found an excuse to destroy Carthage, because it had not kept strictly to the hard terms of the peace made at the end of the second Punic war. The story—one of the saddest in history—is related by an eyewitness. The innocent people were totally destroyed, and the city was completely levelled with the ground.

#### THE CITY ON THE SEVEN HILLS THAT SWAYED BOTH EAST AND WEST

Among the Roman remains in the British Museum are shown some beautiful tessellated pavements from Carthage, once pressed by the feet of its prosperous citizens. We fancy as we look at them that we hear the patter of the children's light, dancing steps, as well as the slow, heavy tread of the aged, in the days when Carthage was great and gay. After the days of horror, the earth covered up these pavements in deep silence for centuries.

Spain was only conquered by most determined efforts. When at last success came to the Romans, the Mediterranean Sea had become a Roman lake, for Egypt alone still remained independent under the successors of Alexander. From Mount Taurus, in Asia Minor, to the Pillars of Hercules, the city on the seven hills now held sway.

But in the gaining of all this world-power the soul of the victors was sadly lost. No longer were they the simple, dignified people of old days. Riches increased so that luxury killed their finest qualities, and made them grasping and cruel. Slaves, ill-treated and mutinous, filled the place of the sturdy peasants whose bones now whitened the distant battlefields. So farming came



succeeded in getting the governorship of Gaul. In his "Commentaries on the Gallic War" he has left us an account of his expeditions and of the hard work by which he conquered all the land north of the Pyrenées and west of the Rhine. He gives an account of the south of our own island, which he visited twice. Gaul he bound firmly to Rome, by treating the conquered people kindly after they were thoroughly beaten, by introducing Roman ideas and customs, by making roads, and by starting buildings.

#### "VENI, VIDI, VICI" CÆSAR'S FAMOUS LETTER IN THREE WORDS

When at last he felt he could leave his province safely, and had also made himself known as a successful general and the "beloved of his soldiers," he was ready to carry out the plans he had made to change the government of Rome.

Crassus had been killed in battle against the Parthians, and then Pompey and Cæsar became rivals for the chief power. When the senate refused to do as Cæsar wished, he came from Gaul with his army and crossed the little river, the Rubicon, into Italy, to fight for his cause. Pompey and the senate and the consuls all sailed away to Greece, and in sixty days Cæsar had gained all Italy.

A great battle was fought between the two generals at Pharsalia, in Greece, the next year, and Cæsar won.

For the next few years he had no rest, going from Egypt to Asia, whence he wrote his famous letter in three words, "veni, vidi, vici"—meaning "I came, I saw, I conquered"—from Asia to Rome, then to Africa, thence to Spain. In the year 45 before Christ he returned to Rome, master of the Roman world.

#### HOW THE MASTER OF THE WORLD WAS STRUCK DOWN BY HIS FRIENDS

Cæsar was assassinated in the senate house the next year by his old friends who thought it their duty to prevent Rome from coming under the rule of one single man. In Shakespeare's play of "Julius Cæsar" is the thrilling account of the tragedy, and the speech of Mark Antony over the body of Cæsar. Apart of this no deeper can be given on page 2917.

Civil war followed, during which time Egypt became a Roman province, as we read in the story of that country beginning on page 1779. Cæsar's clear-cut, determined face, which shows

him to be a great ruler of men, is the first in the gallery of splendid Roman portrait busts in the British Museum. Next to him we see Augustus. After thirteen years of confusion, this adopted son of Cæsar slowly and carefully gathered all power into his own capable hands till the Romans found that they could not do without him.

When he called himself emperor, whence comes our word emperor, it meant that he was the holder of a military command from the people. When he became censor, he could influence appointments to the senate, as *princeps*, or prince of the senate, he could always speak first at its meetings. Then he became chief magistrate of Rome, and head of the national religion.

Many wise changes were introduced which brought about law and order, not only in Rome, but in Italy and the distant provinces. And so, without trouble, the ancient republic passed away, and the rule by one man was set up.

#### AUGUSTUS, WHO RULLED THE WORLD WHEN JESUS WAS BORN

In the time of Augustus there were so many great writers in Rome—such as Virgil, who wrote the splendid poem about Æneas and the founding of the city; Livy, the historian, and Horace, the interesting poet—that to this day a period full of great writers is called an Augustan Age.

But the great epoch-making event that took place in the reign of Augustus was the birth of Jesus in the far-distant province of Syria. It was Augustus who, all unknowing, determined the place of the birth of Jesus, for the emperor ordered a census, or counting of the people, which Mary was on her way to attend when Jesus was born in Bethlehem.

How astonished the powerful emperor and all the great men of his time would have been if they had known that it was not such tame or achievements that would so greatly influence the world, but rather the life and words of the humbly-born Babe who grew up to work in a carpenter's shop, and who, later, had not where to lay His head.

Augustus was the first of a line of emperors who ruled the world for 200 years. We can read their stories and look at their faces in the part of this book beginning on page 323. In the

British Museum we find many deeply interesting memorials of those grand and sometimes bad days—armour, weapons, sculpture, pens—which were called *styls*—inkpots, shoes, keys—for slaves could seldom be trusted—purses and money—all of which make a historical picture-gallery of great interest

#### THE CITY THAT WAS BURIED IN A STORM OF FIRE

All these things, and many more, cause us to feel at home with the old Romans. Some of the most wonderful of these things come from the city of Pompeii, overwhelmed by lava and ashes from Vesuvius in the year 79. So fresh are the colours of the paintings on its walls, so modern their subjects, and so like ours are the cooking implements, that we can scarcely realise how long ago the awful and sudden burial took place. This sealing up by Mother Nature of the city of Pompeii has kept intact for us the very cart-tracks in its streets and the scribbled advertisements on its walls, as well as such matters as the arrangement of houses, baths, and theatres.

In Rome itself, the temples to the gods and the palaces for the emperors were very numerous. Many of the Roman emperors did something toward beautifying the old city on the seven hills. There is the arch of Titus, which we see on page 5012, showing his victory over the Jews and the spoils of the Temple being carried round Rome in triumph. He and his fine father, Vespasian, built splendid baths and the Coliseum which we see on page 83.

In this vast amphitheatre thousands of spectators sat watching the games and shows that the emperors provided to keep the mob in good temper. Its ruins are among the most impressive and astonishing in the world.

#### THE GOOD EMPERORS WHO RULED ROME FOR A HUNDRED YEARS

Trajan built the magnificent Forum, with galleries and walls round its open square, and here he set up the column of which we have a cast in the Victoria and Albert Museum in London. This gives the chiselled picture of Trajan's victories over the Dacians—the barbarians across the Danube.

For a hundred years after Trajan, good emperors ruled in Rome, and there was a time of peace and prosperity

The work of fine artists makes the grandeur and brilliance of imperial Rome still live for us. For we can watch them feasting amid showers of roses, or listening to the old Greek stories in gardens by the blue sea or joining in magnificent processions. But while the careless luxury was going on, ever round the frontiers of the empire the rough, strong peoples were encroaching and gaining little by little. In the middle of the third century there was defeat on every side. The Goths and the Vandals were terrible foes, and the empire began to break up.

We know how Constantine favoured the Christians, and how he founded a new capital in the East about the year 330, and how, in the next century, the empire was divided into two, with Constantinople for the capital of the eastern half, and Rome for that of the western.

There was a terrible time when the Goths poured down the peninsula and took Rome itself, in 470. So much damage did these rough people do that to this day we speak of anyone who is careless of beautiful things as a Goth.

#### HOW THE SPIRIT OF ROME LINGERED ON IN THE WORLD

But the spirit of Rome lingered on. In the West the barbarian conquerors settled down in Spain, Gaul, and Italy, and learnt the language and customs and manners of the people of the old Roman provinces, and to the Christian bishops of Rome was given in these countries a headship which still exists.

In the East a long struggle against Huns and Persians, Arabs and Turks lasted on, as we know, till the taking of Constantinople in 1453 made that city the capital of the Turkish Empire.

What a pageant the long story presents to us! Always the tramp of soldiers from first to last, and for centuries we hear the steady sweep of the oars as the prows, with victory aboard, point from end to end of the Great Sea. As we dream again of the early legends, of the grand buildings, the wild revelry, the work of all kinds, the yells of the storming barbarians, we feel that the sickly perfumes of the extravagant baths and feasts are overpowered by the fine smell of freshly-turned earth under the freeman's plough. For we forget the evil, and remember only that figures of heroes are passing by.

Mediterranean. It is believed to have been brought to England as far back as the middle of the thirteenth century. Owing to its strong, clove-like scent it used to be called the clove, or clove-pink. As a wild flower its colour is always lilac but by careful selection and crossing between the best of the varieties that appeared in gardens we now have all sorts of tints.

Garden pinks of all kinds are closely related to the carnation; so is the old-fashioned sweet-william, which has broader and greener leaves, and the brilliant Chinese pink so frequently grown as a garden annual. The pink and the sweet-william came from Europe long, long ago, and the Chinese, or Indian, pink was brought here from China just about two hundred years ago.

#### The Geraniums

Then there are the geraniums used for bedding in the summer months, but which are too tender to stand our winter climate out of doors. Their proper name is pelargoniums, but the gardener persists in calling them geraniums. We have a number of wild geraniums in this country, but no pelargoniums. The latter were introduced from South Africa about two hundred years ago, and have been so improved by crossing that they have little resemblance to the original South African plants. They may be ranked in three distinct classes—the show pelargoniums of our greenhouses, with large, richly-coloured flowers, the zonal, or bedding, pelargoniums, and the ivy-leaved pelargoniums that look so well trailing over the sides of window-boxes.

#### The Stocks

Brompton and ten-week stocks are cultivated forms of plants that grow wild in the south of Europe, and they have grown in our gardens for a hundred and fifty years. They are annuals. The wallflower belongs to the same family—the cross-bearers—and is also a European plant, but it has been known in our gardens for more than three hundred years. *Arabis*, that produces masses of pure white flowers in early spring on rockeries and in border edgings, is another member of the same family. It was brought to England from the Caucasus little more than a century ago.

#### The Buttercup Family

The buttercup family has given us many garden flowers, among them all the beautiful forms of clematis that climb over our walls and porches, covering them with white or purple flowers. One of the best of the white-flowered kinds is the mountain clematis from India. The big-flowered purple and blue kinds are cultivated forms of a Japanese species. There are no petals in any clematis, the showiness of the flower being due to the four sepals. The noble larkspurs also belong to this family.

Often in cottage gardens we shall find a larkspur with leaves divided into hair-like portions, and with a spike of blue, red, or white flowers. This is also a cornfield weed in the eastern counties. But in larger gardens we shall frequently see a larkspur that towers up to six feet or more, and ends in a long, thick column of brilliant blue flowers. Its parents came from North America a hundred and fifty years ago.

The Christmas rose is another of the buttercup family, nearly related to the wild hellebores. It is no rose at all. Its bold, white flowers appear in winter, and so are greatly esteemed. All the brightly-coloured ranunculi are true buttercups with larger flowers than any of our wild yellow kinds, they came from Turkey and Persia, where they had been cultivated long before. The garden anemones, too, are relations.

There are poppy anemones also, and Japanese anemones, the latter tall-growing, with handsome leaves and large white or pink flowers. Poppy anemones are real old-fashioned garden flowers, for we have grown them for three hundred years, but the scarlet anemone and the Japanese anemone are quite modern introductions.

Columbines, monk's-hood, and peony all belong to the buttercup family, although they are so unlike in general form. The columbines come near to the larkspurs. Up to the middle of last century the garden columbines were mostly forms of our wild columbine, but in later years, owing to the coming of the beautiful, long-spurred, yellow columbine from California in 1873, a good deal of crossing has taken place. The peony, though a native of South Europe, was grown in English gardens at least three

woods. It is one of the prettiest of our smaller bulbous plants, its numerous grass-like leaves spreading around a stem crowded with white, star-like flowers

Among other lilies we must not forget the tulip, of which we have a great number of varieties of diverse forms and colours. Most of them have descended from three wild tulips found in South Europe, Siberia, and Asia Minor. We have one wild tulip in this country, but it has not been cultivated. The sweet-flowered lily of the valley is an English wild plant, which is much more frequently seen in gardens than outside of them. The stately red-hot poker, which makes so fine a display in parks and gardens at the end of summer, is also a lily, coming from South Africa

#### The Hyacinths

The garden flowers that arise from bulbs, like these lilies, might well take up an article to themselves—they are so many. Many of them are known under the general head of Dutch bulbs. Among these are the wonderful trusses of sweetly-perfumed hyacinth-bells that spring from the onion-like bulb in all sorts of charming tints. The original stock from which all these varieties have been produced is the oriental hyacinth, which is wild in Syria

The grape hyacinth belongs to another section of the lily family, and is wild in a few of our eastern counties. Instead of the bell-shaped flowers of the hyacinth, these are globular, and, as they are dark blue in colour, they resemble little grapes, and so the plant has been called grape hyacinth. The wild hyacinth, or bluebell of the woods, belongs to another branch of the family—the squills. The kind more generally seen in borders is the early-flowering, bright blue Siberian squill, often planted with a somewhat similar flower called the glory of the snow, which came to us from the island of Crete about thirty years ago

#### The Amaryllis Family

Another group of bulbous plants comes near to the lilies, but belongs to the amaryllis family. Well-known garden examples of this family include the snow-drop, narcissus, and belladonna lily. The snowdrop is commonly grown in gardens, though of late years the larger Elvies snowdrop often takes its place.

This comes from Asia Minor, and

has only been known to us since 1875. Of narcissi we have not only the wild daffodil and many cultivated improvements of it, but the jonquil, the poet's narcissus, or pheasant's eye, the polyanthus narcissus, and a host of others

#### The Iris Family

Then there are so-called bulbous plants whose root-stocks are solid corms, instead of being made up of fleshy scales as the real bulbs are. These belong to the flag, or iris, family, and include the crocus and gladiolus. The flags are a large group, which includes the English and Spanish irises, springing from underground corms and having narrow rush-like leaves, and the German irises, which have very thick root-stocks that creep along the surface, with broad, sword-shaped leaves

Our wild yellow flag belongs to this section. All are beautiful, and many of them have flowers as strikingly coloured as the tropical orchids

We have one gladiolus that we can call an English wild flower, for it grows in the New Forest, but is rare there. It has rosy-purple flowers, and we may find it abundant in Cornish gardens. There is one wild crocus in this country that has purple flowers in autumn, but does not put out its leaves till the following spring. Our garden crocuses—white, purple, blue, and yellow—are cultivated forms of species that are found growing wild in the south of Europe.

#### The Dicentra

Though not a bulbous plant, there is one spring flower we should know. That is the dicentra, a plant introduced from Siberia and Japan. It is related to our wild fumitories. As soon as the frost has gone, it throws up large, divided leaves and long, arching sprays of rosy, drooping flowers, whose form has caused the plant to be called the bleeding heart and the Dutchman's breeches.

#### Other Garden Plants

There are many other garden plants that should be mentioned, including some beautiful shrubs, such as the old-fashioned lavender-bush, with its spikes of fragrant blue flowers, the escallonia, with its crimson, waxy flowers, the handsome holly-leaved barberry; the Virginian creeper, that turns blazing red in autumn; and the mock-orange, that has wreath-like sprays of pure white flowers.

woods It is one of the prettiest of our smaller bulbous plants, its numerous grass-like leaves spreading around a stem crowded with white, star like flowers

Among other lilies we must not forget the tulip, of which we have a great number of varieties of diverse forms and colours Most of them have descended from three wild tulips found in South Europe, Siberia, and Asia Minor We have one wild tulip in this country, but it has not been cultivated The sweet-flowered lily of the valley is an English wild plant, which is much more frequently seen in gardens than outside of them The stately red-hot poker, which makes so fine a display in parks and gardens at the end of summer, is also a lily, coming from South Africa

#### The Hyacinths

The garden flowers that arise from bulbs, like these lilies, might well take up an article to themselves—they are so many Many of them are known under the general head of Dutch bulbs Among these are the wonderful trusses of sweetly-perfumed hyacinth-bells that spring from the onion-like bulb in all sorts of charming tints The original stock from which all these varieties have been produced is the oriental hyacinth which is wild in Syria

The grape hyacinth belongs to another section of the lily family, and is wild in a few of our eastern counties Instead of the bell-shaped flowers of the hyacinth, these are globular, and, as they are dark blue in colour, they resemble little grapes, and so the plant has been called grape hyacinth The wild hyacinth, or bluebell of the woods, belongs to another branch of the family—the squills The kind more generally seen in borders is the early-flowering, bright blue Siberian squill, often planted with a somewhat similar flower called the glory of the snow, which came to us from the island of Crete about thirty years ago

#### The Amaryllis Family

Another group of bulbous plants comes near to the lilies, but belongs to the amaryllis family. Well-known garden examples of this family include the snow-drop, narcissus, and belladonna lily The snowdrop is commonly grown in gardens, though of late years the larger Elwes snowdrop often takes its place

This comes from Asia Minor, and

has only been known to us since 1875 Of narcissi we have not only the wild daffodil and many cultivated improvements of it, but the jonquil, the poet's narcissus, or pheasant's eye, the polyanthus narcissus, and a host of others.

#### The Iris Family

Then there are so-called bulbous plants whose root-stocks are solid corns, instead of being made up of fleshy scales as the real bulbs are These belong to the flag, or iris, family, and include the crocus and gladiolus The flags are a large group, which includes the English and Spanish irises, springing from underground corns and having narrow rush-like leaves, and the German irises, which have very thick root-stocks that creep along the surface, with broad, sword-shaped leaves

Our wild yellow flag belongs to this section. All are beautiful, and many of them have flowers as strikingly coloured as the tropical orchids

We have one gladiolus that we can call an English wild flower, for it grows in the New Forest, but is rare there It has rosy-purple flowers, and we may find it abundant in Cornish gardens There is one wild crocus in this country that has purple flowers in autumn, but does not put out its leaves till the following spring. Our garden crocuses—white, purple, blue, and yellow—are cultivated forms of species that are found growing wild in the south of Europe

#### The Dicentra

Though not a bulbous plant, there is one spring flower we should know That is the dicentra, a plant introduced from Siberia and Japan It is related to our wild fumitories. As soon as the frost has gone, it throws up large, divided leaves and long, arching sprays of rosy, drooping flowers, whose form has caused the plant to be called the bleeding heart and the Dutchman's breeches

#### Other Garden Plants

There are many other garden plants that should be mentioned, including some beautiful shrubs, such as the old-fashioned lavender-bush, with its spikes of fragrant blue flowers, the escallonia, with its crimson, waxy flowers; the handsome holly-leaved barberry, the Virginian creeper, that turns blazing red in autumn, and the mock-orange, that has wreath-like sprays of pure white flowers



THE SWEET PEA

The sweet pea, which is so popular in our gardens on account of its fragrance and the variety of its colours, grows wild in Sicily. It is very useful to hide an unsightly spot, and forms a good screen for a fence



THE CARNATION

The carnation has been a favourite garden flower for about 600 years, and is now grown in a great variety of colours and markings. Owing to its clove-like odour, the crimson carnation is often called the clove



THE EVERLASTING PEA

This is a very hardy plant and will thrive almost anywhere, even in stony courtyards. Unlike the sweet pea, whose flowers grow in twos or threes on each flower-stalk, the blossoms of this pea come in clusters



THE WHITE SWEET PEA

The sweet pea is grown in almost every variety of colour, from the deeper shades to the most delicate tints, but perhaps none is so attractive as the white pea, on account of its dainty and beautiful appearance



**THE TEN-WEEK STOCK**

Stocks are found in most gardens, for they are very attractive on account of their varied colours and their masses of bloom. In the west of England the ten-week stock is called the jiloffer, a corruption of gillyflower.



**THE CLEMATIS**

Among climbing plants there is none more beautiful than the clematis, or virgin's bower, as it is called. The various kinds of clematis vary in size, some growing about a foot high and others having stems fifty feet long.



**THE BLUE CLEMATIS**

The large-flowered blue clematis, of which there are several kinds, came originally from Japan. It needs a richer soil than the white-flowered varieties, but thrives best in a chalky soil. Clematis looks well upon walls.



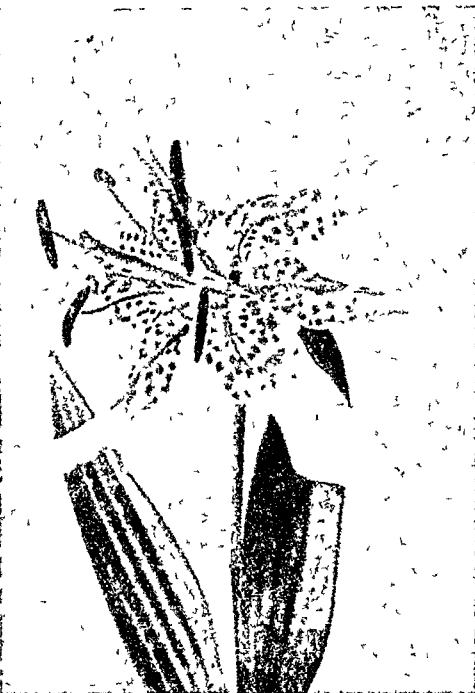
**THE MONK'S-HOOD**

Monk's-hoods should never be planted where their roots could be dug up and mistaken for the various kinds of eatable roots, for they are very poisonous. The name of the plant refers to the shape of the flowers.



**THE GLOBE THISTLE**

Some of the wild thistles are very striking plants, but the most ornamental of the whole thistle family is the blue-flowered globe thistle, shown here. It comes from South Russia, and its large, round flower-heads are blue.



**THE LILY**

All the lilies are very stately and graceful. Many of them are much alike, but particular varieties are adapted to particular soils and situations. Some are admirably suited for the rock garden, and others for the shrubbery.



**THE GOLDEN-RAYED LILY**

This is one of the handsome lilies that have come to us from the East. There used to be a superstition that the health of the household in whose garden this lily grew corresponded with the condition of the lily.



**THE MADONNA LILY**

The Madonna is one of the best-known lilies, and at the same time one of the loveliest. It will thrive well for years if left undisturbed in good soil. It was dedicated to the Virgin Mary, and is also called the lady lily.





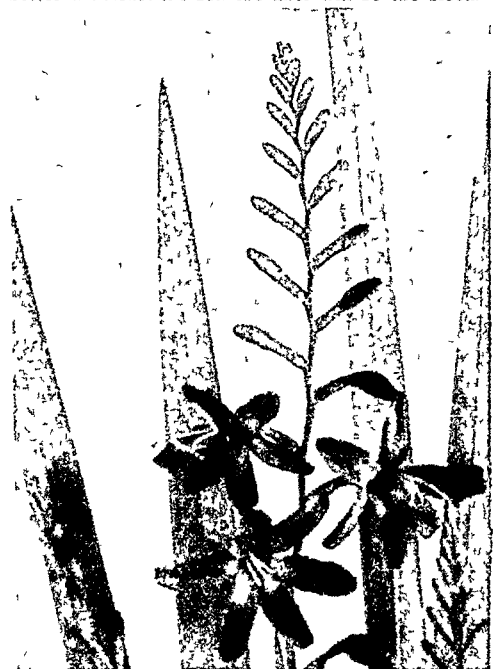
THE MALOPE

The malope is a showy plant with crimson and white flowers, that are very handsome when massed in groups. The plant grows to a height of about three feet, and the better and richer the soil the finer will be the bloom.



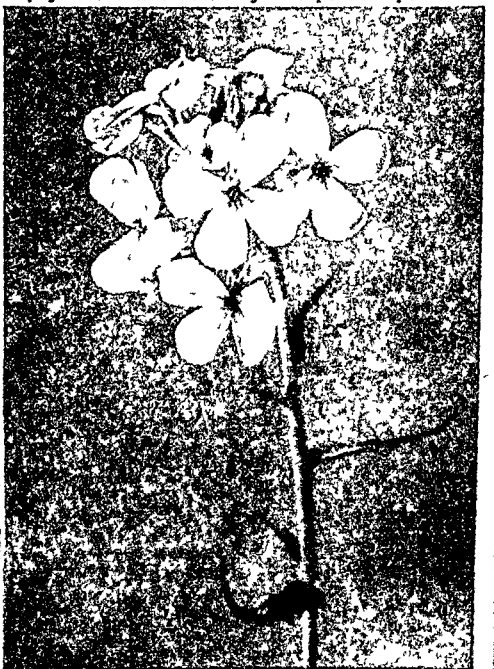
THE CHINA ASTER

China asters, when well tended, always make the garden bright and gay with colour. They should be grown together in masses in a deep, rich soil, and will well repay all the care that may be expended upon them.



THE MONTBRETIA

This graceful plant will thrive for years on a poor clay soil, and bloom well every year, but it always shows, by finer blossoms, the benefit of a better soil. It is, however, essential that the soil should not be too wet.



THE DAMES' VIOLET

The dam's violet sometimes grows wild, but only when seeds have been blown or carried from a garden, for it is not really a wild flower. The blossoms are like those of lady's smock, and are very fragrant at evening.

If we take a grown-up, healthy, sane, intelligent human being, and separate him entirely from the company of all other men, he will lose his reason and become less than human. The solitary man becomes insane. All this might be proved and discussed at any length, for it is one of the most important facts in the world. We are members one of another.

#### THE GREAT TRUTH THAT A NATION IS LIKE A LIVING BODY

We must again go back to Aristotle, and even to Plato his master, for the next great truth which we must learn—a truth which follows directly from what we have been saying. It is that a nation is not just a number of people, like a heap of bricks or grains of sand, but is a whole—just as a heap of bricks becomes a whole when the bricks are built up to make a house.

We can see that this must be so if every individual is, in part, a product of all the other individuals, and, on his part, helps to produce the others by direct and indirect influences upon them. So we have many phrases to express the idea that, in a sense, a nation is like a great living creature. We call it the *body politic*, or the *social organism*, and sometimes figure it as a noble woman—*Britannia*, for example. This comparison of a nation with the body of a living individual is a very valuable one.

On page 5255 of this book we read that though an atom is a whole, yet it is made up of parts which are called electrons, and we are only now beginning to understand the atom because the key to every fact about it lies in the nature of the electrons that make it.

On a higher plane we learn that the living body, though it is a whole, is made up of parts called cells, which are themselves alive, and we have only begun to understand the living body since we have begun to learn something about the nature of the cells which make it up.

#### HOW OUR OWN BODY HELPS US TO UNDERSTAND THE LIFE OF A NATION

So, also, we may imagine that the nation is a living body, but that we shall never really understand the life of a nation until we understand the nature of the persons who make it up. That is the great key which governs all true thinking—not the talk of politicians, but real thinking—about a nation. And that is why we have been very carefully

studying the lives, the bodies, and the minds of ourselves, so as to lead up to the study of the nation of which each one of us is a part.

Now let us go a little more carefully into this wonderful comparison between an individual and a nation made up of many individuals.

When we learn the history of life, we find that living creatures were at first made of only one cell each, then of a few cells, which stayed together and were all alike, then of cells, few or many, running at last into billions of billions, which became different from one another. It is in this difference that the possibility of progress lay, some cells doing one thing and others doing another. The same is true in a nation, only it was noticed in the case of a nation long before it was understood in the case of a living body. In a nation we call this the division of labour.

#### THE DIVISION OF LABOUR, WITHOUT WHICH MEN AND NATIONS COULD NOT LIVE

This division of labour does not mean merely that when there is a lot of water to be carried from one place to another the labour is just divided between ten men, each of whom takes a bucket and runs backwards and forwards. It means, so to speak, that one man grows india-rubber and another manufactures india-rubber pipes, that another gets iron out of the earth, while another makes iron into taps, so that by this kind of division of labour the work is done far more easily than if all men did the same thing. Now, when a great Frenchman was studying the life of the body, he saw that this division of labour occurs in the individual body, just as it does in the body politic, and so he called it the *physiological division of labour*, by which name it has been known ever since.

Now with this key we can begin to understand many things. A nation has to live just as the body has to live, it has to have men to guide it, and the men who guide a nation correspond to the nerve-cells of the brain. It has to have men who make special things for the nation, and the manufacturers correspond to the gland-cells of the body. It has to have people like soldiers, scavengers, doctors, and nurses to protect it from enemies inside and outside, and the bodies of these protectors correspond to the white cells of the



## GOOD-BYE TO THE

MY LITTLE TRAVELLERS

FOR we have been travelling together, you and I, two years. We have been companions on two journeys round the sun. Into a hundred thousand homes and more, fortnight by fortnight, this book of my heart has gone. From thousands and thousands of homes has come back to me the love that men count more precious than gold. And to-day I write this last page of all, the last note in the book that has made us friends.

BUT, though in these words there must be something of the sadness of good-bye, it is not the sadness that comes when friendship ends. For our book is to go on, and month by month we may still meet in the pages of the new *Children's Encyclopædia*. And have we not, in these years in which we have travelled through our lives together, been thinking the same thoughts, building up the same memories? It cannot be that you and I will forget these years, that the day will ever come when this book will be as nothing to you or to me.

THAT cannot, cannot be. For we have learned together in this book the truth of Life. We have learned to count upon the things that matter. We know that the things that bind us in friendship are the things that last for ever.



part of the body, like every part of a wonderful machine, is serving all the rest and is being served by all the rest, because it is doing its own work rightly in beautiful harmony with all the others

#### THE ENEMY OF THE NATION WHO STANDS FOR ONLY A PART OF IT

The great truth we learn from this is that he is an enemy of the nation who stands for any part of it against the others—unless, of course, the others are in the first place injuring it. It must be an injury to the social body to set religion against religion, or class against class, or school against school.

In some distant day, the dawn of which can only be seen by the prophet's eye, the eye of faith and hope, men will learn that what is true of one nation is true also of the whole of the nations which we call mankind. They will learn that just as to oppose one part of the body against another is to injure it or to destroy it, just as strikes or labour wars, in setting one class against another, injure the social body, so wars between nations injure that mightiest body of all which we call humanity. But this will not be learnt until statesmen and soldiers and churches give up fighting for themselves and care only for those whom they profess to serve.

We have now learnt the great truth that civilisation and human progress depend upon human variety. This has the tremendous meaning, which no nation has yet realised, that, instead of taking all our children and giving them all the same education, we must find out what each child is best fitted for, and we must educate him for that.

#### WHY EVERY CHILD SHOULD BE EDUCATED FOR THE THING HE CAN DO BEST

The great reason why education is such a failure is not only that we set about it, as a rule, in altogether the wrong way, but also that we think we have merely to do something like making a number of coins out of metal by stamping it with dies, as they do at the Mint. But as two children may differ from each other certainly not less widely than a nerve-cell and a red blood-corpuscle differ, it is plain that if we give them exactly the same education, however skilful and devoted we are, we cannot be doing the best for both. The mightiest reform of education in the future—a reform which will

help to make the new earth of men's holiest and truest dreams—will depend upon our realising that all children are different, and that the best for the child and the best for mankind is to find out what the child is best fitted for, and to educate him for that. More generally and worthily stated, this means that for the self and for society alike our duty is to develop as nearly as possible towards perfection the special nature of each child.

Of course, there are certain things which every human being, just because he is a human being, ought to know and ought to be able to do. Everyone ought to be able to read and write, for we are all social products and producers of each other, and reading and writing are the great instruments by which we affect each other, by which the wisdom of the dead benefits us, and by which our wisdom, if we have any, will benefit and mould and live in the far distant future when we are dead.

#### HOW A NATION'S STRENGTH DEPENDS UPON THE LIFE OF ITS CHILDREN

But it is another thing to say that all boys learning to read should read the same things. One is interested in science, another in poetry, another in mathematics, another would prefer to read books only for necessary purposes, while he would love to read the face of Nature—the sky and the soil. Why should we try to make a bad clerk of him when he might be a splendid farmer, taming the light and the soil and the water and the breeze to his will, making food for the life of himself and his nation? But this also is a great subject and would require many volumes to deal with fully.

As we go on thinking about a nation we shall see that there is one fact which is more important than all others. It is that all the individuals which make up this living being—the nation—die, and yet its life persists. This brings us to the great truth which stares us in the face, and yet which not one person in millions has really seen, that the destiny of a nation depends upon its parenthood and childhood. It depends partly upon the number of children that are born, partly upon their quality, and partly upon the care that is taken of them. Part of this great truth is already known and acted upon in Germany.

the world's history, though people thought that they were dead or dying. Such nations are the Chinese, the Japanese, and the Turks. They have kept clear of this terrible racial poison almost entirely. If in some future day the struggle is to be between these sober nations and Western civilisation with its alcohol, no student of life can doubt that our civilisation, like all its predecessors, will be destroyed. We should be better employed in Europe at this hour if, instead of growing barley for whisky, we were to grow more wheat for bread.

#### EDUCATION IS TO GIVE THE PEOPLE THE RIGHT THINGS AROUND THEM

The future of this question depends largely upon education, and it is just upon this subject that England most urgently needs now to be enlightened. Education is the provision of an environment, that is to say, the providing of everything outside the child—air, light, food, clothes, ideas, and love—everything. If a child were simple, he would have simple and few needs in his surroundings, but a child is a human being, and a human being is the most complicated thing in the world. So we fail in our education of the child if we leave light, or love, or ideas, or soap, or any one of many other things, out of his surroundings. The child is not perfectly educated unless we rightly provide the whole environment for the whole child—his skin and his soul, his muscles and his mind.

In Germany not only does the population increase at twice the rate of ours, but everyone believes in educating the children. Neither in England nor in Germany is there an education party, but the reasons are different in the two cases. In Germany there is no education party simply because all individuals and all parties alike believe in education.

#### MR RUSKIN'S STORY OF THE MAN WHOSE GOLD DROWNED HIM

Perhaps the children who read this book, and this story of their lives which has been dedicated to childhood and the future, will believe in education when they grow up. Perhaps they will become members of an education party, teaching real patriotism to England, perhaps they will say when economy is to be practised "Practise your economy everywhere else first, but last of all, better not at all, upon the children

and upon the education which they require to make them citizens of any nation that can live in the coming world." We must worship God and not mammon—life, and not gold. Gold is for life, and not life for gold. In any bargain the all-important question is not how much gold is passing, but how much life is passing, and in which direction.

We have been studying the story of our lives, let us remember the story told by Ruskin of a man who had forgotten what we must learn. "Late, in a wreck of a Californian ship, one of the passengers fastened a belt about him with two hundred pounds of gold in it, with which he was found afterwards at the bottom. Now, as he was sinking, had he the gold, or had the gold him?" We may close with some further words of tremendous import, written by that great man—words more than golden, words only to be called living words.

#### THE MAKING OF THE SOULS OF MEN AND WOMEN, OUR GREATEST MANUFACTURE

"In fact, it may be discovered that the true veins of wealth are purple, and not in rock, but in flesh—perhaps, even, that the final outcome and consummation of all wealth is in the producing as many as possible full-breathed, bright-eyed, and happy-hearted human creatures. Our modern wealth, I think, has rather a tendency the other way, most political economists appearing to consider multitudes of human creatures conducive to it only by remaining in a dim-eyed and narrow-chested state of being.

"Nevertheless, it is open, I repeat, to serious question, which I leave to the reader's pondering, whether, among national manufactures, that of souls of a good quality may not at last turn out a quite leadingly lucrative one? Nay, in some far-away and yet undreamt-of hour, I can even imagine that England may cast all thoughts of possessive wealth back to the barbaric nations among whom they first arose, and that, while the sands of the Indus and adamant of Golconda may yet stuff the housings of the charger, and flash from the turban of the slave, she, as a Christian mother, may at last attain to the virtues and the treasures of a Heathen one, and be able to lead forth her sons, saying:

"These are *my* jewels."

sure to buy these packets only from reputable dealers, as forged stamps are sometimes found in the more expensive packets.

There are right and wrong ways of collecting stamps, and we should from the beginning set about our hobby in the right way. A mere mass of all kinds of stamps, without order or arrangement, is useless. We must endeavour to obtain complete sets of each particular issue of stamps, as, for instance, the present King Edward stamps used in Britain. It will be easy to get the halfpenny, penny, three-halfpenny stamps, and so on, but when we come to the half-crown and five-shilling stamps, these are less easy to obtain because so few of them are used in comparison with the others. But we must not get discouraged. Sooner or later we shall find an opportunity of filling up the blank places in our collection.

As with British stamps, so with foreign and colonial. We should endeavour to complete our sets of different issues, putting the various values in their proper places and order. And this brings us to the question of how we are to keep and arrange our collection. There are many excellent albums sold with pages set apart for the different countries and places for the various stamps. They range in price from sixpence to a sovereign according to their size, the quality of their binding, and so on.

But it is not necessary to buy one of these ready-made albums. A plain, thick exercise book will do, or two or three thinner books, and, as a matter of fact, it is much the better plan to make our own album. We should rule a border round each page, leaving a margin or about half an inch all round. Then we should rule spaces to receive the stamps, and above each row we should leave about a quarter of an inch for a line stating the date of the issue and other interesting particulars. There are different ways in which we can arrange the countries. Some put them in

strictly alphabetical order, irrespective of what part of the world they belong to, but this is bad. Another and better arrangement is to put Great Britain first, and then to let the other countries follow in the order in which they adopted the postal system. But perhaps the best arrangement of all is to place Great Britain first, with her colonies and dependencies following, and then to divide the remainder of the book, or the books, into five divisions — Europe, Asia, Africa, America, and Australasia, subdividing these into their various countries in alphabetical order. As to the space that should be allotted to each

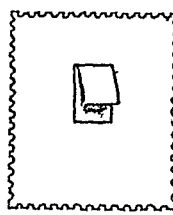
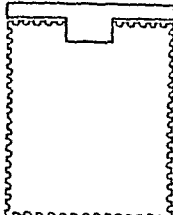
country, this varies very much. Some countries, like Spain, which have produced a large number of issues, will need seven or eight pages, but for most states three or four pages will be sufficient. There are some countries, like Naples, that no longer exist as separate states, and do not now issue

stamps. One page will be sufficient to allow for each of these. It is better to use only one side of each sheet in the book, leaving the other side of the paper blank. It is important that we mount the stamps in the album properly. On no account let us

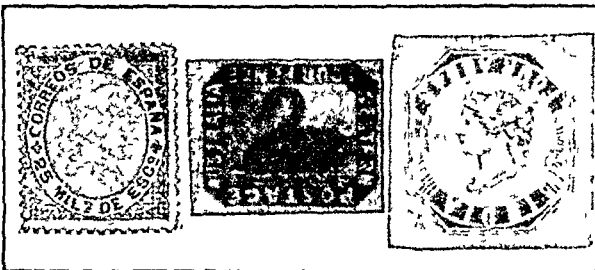
gum or paste the whole of the back down upon the page. This spoils the stamp, takes away from its value, and makes it difficult, if not impossible, to remove the stamp from the album. There are two ways of fixing our stamps upon the page.

We may make a little hinge of tissue-paper at the top, as shown in the first picture on this page, gumming only a small piece to the stamp itself, or we may double a little piece of paper and stick one part to the stamp, as shown in the second picture,

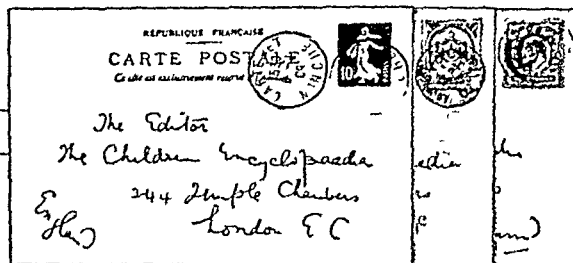
and the other to the page. Either of these plans is good, and does no damage to the stamp, making it easily removable, although holding it securely. It is, of course, essential that we do not use a gum or paste containing any chemical that will damage the stamps.



Two different ways of fixing the postage-stamps to the pages of the album



These three stamps, a Spanish, a West Australian, and an Indian, are worth £1,250, because, in printing, parts of the designs were by accident turned upside down. The correct issues are worth only a few shillings.



The proper way to fasten postcards in the album

# LIVING WAXWORKS AT HOME

A VERY interesting and enjoyable change from the ordinary games of an evening party is to provide a series of *tableaux vivants*, or living pictures. A number of those present dress up, and having arranged themselves in a group representing some historical scene, or some incident from a novel, stand perfectly still for a few moments while the rest of the party look on. As an additional attraction it may be left to the onlookers to guess what the scene represents.

Some very effective tableaux may be arranged at no expense, tablecloths, shawls, quilts, and so on, providing all the costumes necessary. Scenes from Shakespeare, such as the trial scene in the Merchant of Venice, or the death of Caesar in Julius Caesar, provide good incidents for representation, and even a succession of single characters from Shakespeare or Dickens are also very interesting, and with a little ingenuity these figures can be made up. We find some hints upon how to dress up on page 5195.

Then again, well-known scenes from the Arabian Nights or other familiar fairy tales give ample scope to those taking part in, or arranging, the tableaux.

A pleasant variation on the more serious attempts at living pictures is to give humorous tableaux, and to leave the spectators to guess what they represent. The more grotesque the costumes and apparatus used, the more fun and amusement will be caused, and the more hearty the laughter as the curtains are drawn aside to reveal each succeeding group.

Almost any incident in English or foreign history can thus be represented. For instance, a suitable incident to portray would be Sir Walter Raleigh placing his cloak upon the ground for Queen Elizabeth to walk over. Neck frills for the queen and the knight, such

as were worn at the period in which they lived, can easily be made in a few minutes from a newspaper by using a pair of scissors.

Columbus discovering America can be shown in this way. Take an ordinary bath, or turn a table upside down to represent the boat. Let Columbus stand in the front of the bath shading his eyes with his hands, and other characters should also sit in the ship craning their necks to catch a glimpse of the distant land, which may be indicated by a little stars and stripes flag.

These two incidents will give some idea of the possibilities of humorous tableaux. A whole host of incidents from history will it once suggest themselves. King John signing Magna Charta, the tea being thrown into Boston Harbour, King Charles II hiding in an oak-tree, Sir Francis Drake playing bowls on Plymouth Hoe, and such scenes, are suitable. The last named suggests the possibility of arranging a series of humorous representations of well-known pictures. There is the famous Drake picture which appears on page 805 of this book, and, indeed, the Children's Encyclopedia is full of historical pictures that would lend themselves to this treatment.

A series of tableaux provide plenty of scope for real ingenuity on the part of those arranging and taking part in them, and certainly, if they are well executed, there is no more popular feature of an evening party. Great fun is caused by the attempts to guess the humorous representations, and in the matter of dressing up, the ludicrous may be cleverly combined with the historical.

All the performers must keep absolutely still, and their faces must not wear the suspicion of a smile. The success of the living pictures depends upon the statue-like behaviour of the performers taking part.

## JUDGING DISTANCES

It is always useful to be able to judge distances, especially when we are in the country, and it is remarkable with what accuracy this may be done with a little practice. When two or more boys are out in the fields or in a park, it is a very good pastime to arrange a competition to see who can judge distances most correctly.

Of course, at first it takes a minute or two to think out how far away a certain person, a tree, or a building, may be, but as we get more practice, so we shall be able to judge in a moment what, roughly, is the distance away from us of the things we see.

Distances never look so great in the country as they do in town, for the reason that objects appear nearer than they are when the light is bright, and, of course, the light is always better in the country than in towns, because it is neither obscured by buildings nor rendered dull by a pall of smoky air overhead. Across water, objects always appear nearer than they are, and snow on the ground also has the effect of lessening, to the eye, the distance of anything

## IN TOWN & COUNTRY

If we are looking at something across a valley, or when we are sitting on the ground, the distance appears greater than it really is, and if the object looked at is against a background of the same colour as itself, it looks farther away than it really is.

The way to learn to judge distances is to begin with things quite near, and to compare these with things nearer still, the distance of which is pretty obvious. Then, gradually, we can go on to try our skill with things that are farther off.

It is interesting to remember that at fifty yards the mouth and eyes of a man can be seen, at a hundred yards the eyes are mere dots, at two hundred yards the buttons of a coat can be seen, at three hundred yards the face can be distinguished, and at four hundred yards the legs are seen moving. At five hundred yards the colour of the clothes is visible. These useful points are taught to soldiers in some of the European armies, and it is well worth our while to commit these few facts to memory, so that we may use them when we are out walking.



# THE GAME OF "WHAT IS WRONG?"

SOME games teach us how to use our bodies, and others teach us to use our brains. The game of "What is Wrong?" develops the mind by testing our powers of observation.

We all know that in every house certain things have a regular place. For instance, we may have a clock on the mantelpiece, and standing upon each side of it a vase.

Now, these things usually occupy the same place always. They are never shifted except for cleaning and dusting. That position on the mantelpiece is then recognised place.

We may possibly get so used to seeing a photograph placed at a certain angle upon a certain spot that it seems to become part of the room, and we cannot imagine it in any other place except that which it occupies. We feel sure that if it were shifted to any other spot we should notice the fact at once. In all probability, if, instead of a little thing like a photograph, a large piece of furniture were moved, we should notice it quickly. But it is really wonderful what we do not see, even when we are looking at things, if our mind is not actively concentrated and our power of observation is not acute.

In playing the game of "What is Wrong?" one player stops in the room while all the others go outside the door. The player in the room makes some little alteration in the position of a thing that usually stands upon a certain spot, or is placed in a certain way, and when he admits the other players he asks them what is wrong. The players, as they discover what is wrong, sit down until all have made the discovery or given it up. Then the player who first found out what had been changed remains in the room and

moves something in his turn while the others are outside, and so on. Before we begin to play the game, we should fix a certain time, say, two minutes, in which the changed object must be pointed out. If in that time no player succeeds in discovering the thing that has been moved or altered, then the thing is shown, and the players go outside again, the same player remaining in the room and altering the position of something else. If we like we may give points for success. The one who remains in the room scores five points if his alteration is not discovered by any of the others. If, on the other hand, the changed object is discovered, then the first discoverer scores five points. At the end of the play we count up the points, and the player who has scored the greatest number wins the game.

A variation of the game is for the player who remains in the room to change not one object only, but a number. The other players then have more to discover, and there is less constant walking in and out of the room.

There are many things that we may alter in every room. For instance, we might turn a photograph upside down in its frame, if the poker is kept on one side of the fireplace we can change it to the other side. Should a piece of music be on the piano we could turn it upside down. Vases may be changed, and pictures that hang at an angle from the wall may be made to hang flat against the wall, books may be turned over on the table so that their front cover is downwards. In fact, the number of things that can be altered is almost endless, and the game can be played in any room that is available.

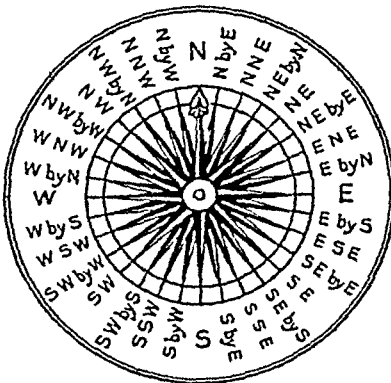
# HOW TO READ THE MARINER'S COMPASS

EVERY boy, especially every boy scout, ought to be able to read the mariner's compass—that is, to repeat the 32 points from the North by the way of the East and round to North again—without any hesitation. This is one of the first things that midshipmen and sailor boys are taught to do, and they also learn to read it backwards, so as to be thoroughly familiar with all the 32 points. It is only when we know them properly that a compass becomes of real use to us when out sailing or walking. The picture here shows the position of the 32 points. The four cardinal points are marked N, S, E, and W, and represent North, South, East, and West. The arrangements of the points between the cardinal points is similar in all four quarters of the compass card. Midway between N and E is North-east, marked NE, and midway between N and NE is NNE, called North-

north-east. The point midway between NE and E is East-north-east, marked ENE. The remaining points are N b E, called North by East, NE b N, North-east by North,

NE b E, North-east by East, and E b N, East by North. The other quarters of the card have corresponding names. As we know, the magnetic needle usually points to the magnetic pole, and not to the geographical pole. The difference between the two directions is called the variation, and as the variation of the compass differs in different parts of the world, sailors have to learn how to allow for this, wherever they may be. If the variation were not taken into account by seamen, the consequences might be very serious.

indeed, as a slight deviation from the true course that should be sailed by a ship might send it upon the rocks, and result in the vessel being wrecked and all hands lost.



The thirty-two points of the compass

# PLAY WITHOUT PLAYMATES

## WHAT TO DO WHEN YOU ARE ALL ALONE

WE are not all so fortunate as to have brothers and sisters to share in our games, and sometimes, too, when illness shuts a boy or girl right away from all playmates, it is not easy to find something interesting to do. Now, the Children's Encyclopædia tells of *over* so many different things that can be done by boys and girls when they are quite alone, and the following lists of puzzles, toys, things to make from paper, games, and a number of other amusements have been drawn up specially for those who are lonely and want something to amuse them

What to Do with a Box of Matches	3611
Putting One Match Through Another	562
How to Make Spinning Pictures	3287
The Wonders that Figures Will Do	974
How to Get Through a Postcard	3518
Fun in Anagrams	5002
The Straw Indian	1192
A Paper Windmill	2878
The Mysterious Tumbling Tablet	4034
The Fighting Clothes-pegs	762
Irish Potato Woman and Her Pig	871
General Waxvestas and His Family	328
A Popgun from a Quill	4890
Name-Pictures	325
How the Sailor Ties His Knots	765
What to Do with a Piece of Paper	1925
Things to Make with Folded Paper	4776
How to Make a Paper Box	332
A Paper Shade for a Candle	2460
New Uses for Old Christmas Cards	2877

Here is a list of interesting things that a girl can easily make in about half an hour

What to Do with a Box of Beads	2033
How to Make a Serviette-holder from Curtain-rings	3172
A Perky Parrot Kettle-holder	3281
How to Make a Lavender Bottle	1925
A Set of Doll's Furniture	1717, 1814
A Cage Made of Cardboard and Pins	2465
John Chinaman Made of Pea-nuts	221
A Little Dutch Family Made of Cork	221
Dolls Made from Clothes-pegs	4457
A Ball of Many Colours	973

Little Red Riding Hood Dolls	113
A Butterfly Needle-book	4998
Animals for a Toy Zoo	
A Cat	449
A Lion and a Tiger	559
A Rabbit and a Pig	657
A Barn-door Cock	761
A Dog	1079
A Horse	1608

If we are fond of drawing, here are some ideas which will give us a good deal of fun

Queer Pictures Built Up from Squares	975
An Owl and a Frog Made from Circles	1724
Drawing a Cat with the Aid of Coins	3514
A Train Built Up from Squares	1824
A Simple Way to Draw a Dog	2034
What to Do with an Exercise Book	2462
A Simple Way of Drawing a Horse	3726

If we are interested in puzzles, we can find quite a number of them from the index, for the book is full of them, but here are a few which are rather different from the "problem" kind of puzzle, and to many of us are, perhaps, more interesting. On pages 1180, 1716, 3175, 3282, and 3391, we shall find a series of pictures in which we are asked to point out what is wrong, and in the list which follows are various other interesting puzzles

Picture Plant Puzzles	4999
What are These Things?	977, 4774
Puzzle Pictures of Famous Men	2872
Puzzle Pictures from English History	764
What Place are We In?	2356
What Scene in History is This?	2466
Can You Tell the Reason Why?	2570
What Animals are These?	2772
Who are These People?	4350

If a boy is fond of carpentry, he will find throughout this book many suggestions for things to do with a box of tools, if a girl is fond of needle-work and has clever fingers, she will find instructions for many things to make, but the particular pastimes and puzzles mentioned on this page are intended chiefly for the boys and girls who want something to amuse them when they are alone.

## THE HEDGEHOG AS A PET

HEDGEHOGS make very interesting pets. They can be bought for about two shillings each or three shillings a pair.

A good point about a hedgehog is that he kills and eats black-beetles. While, perhaps, we do not admire his taste in this respect, we must at least acknowledge his usefulness. But if the black-beetles are very numerous he may not be able to eat all of them. So we must not expect too much from the hedgehog if we adopt him for his powers of digesting black-beetles. It is said that hedgehogs keep away rats, but this story has no foundation in fact. No animal is blamed more than the hedgehog for things which it is impossible for the little creature to do.

A hedgehog may be allowed the run of an outhouse, and there should be a heap of straw or hay in a corner in which he can make his

own quarters. The food given should be both animal and vegetable. He should be given some morsels of raw meat every day; dead mice will serve quite as well as any other kind of meat, for he loves mice. He should also have fresh bread and milk every morning. Indeed, the hedgehog will eat almost any odd scraps, but they should be given to him only if they are wholesome and fresh. He will be very glad to receive a meat bone to pick.

On the approach of winter, the hedgehog will either dig a hole in the earth and bury himself until the warm weather returns in spring, or he will go away to some obscure corner of the outhouse and cover himself with leaves or rubbish, and thus spend his winter. In this state he should be left alone. Even in summer he will not be very active by day, but will forage for his food at night.

# CORRECTIONS IN THE CHILDREN'S ENCYCLOPÆDIA

IT is perhaps true to say that no great book has ever been printed without mistakes ; but it is also quite true to say that in every great book the greatest possible care is taken to avoid mistakes. In spite of this care, however, little errors have crept here and there into The Children's Encyclopædia. Seeing that this book has been produced, fortnight by fortnight, in the form of a magazine, in order that it might be issued cheaply, the number of errors is remarkably small, and where they are important corrections are given here. The corrections are arranged in sections, under pages

## THINGS TO MAKE AND THINGS TO DO

- 328 The explanation of "gathering" should read "same stitches as running except that you should take up only half the threads that you miss"  
561 *Backstitch*, middle of first column, should be *stitching*  
659 In answer to problem No 44, *He was wrong* should read *He was right*  
1182 Addition sign + at top of second column should be the multiplication sign x  
3288 *Aphides* (plural), near the bottom of first column, should read *aphis* (singular).  
3719 Pictures referred to as on page opposite are on 3721  
1348 *Forty four*, in the third arithmetic problem, should read *fifty four*  
4458 Last lines should read 5 Florence Nightingale, 6 David

## THE CHILD'S BOOK OF WONDER

- 23 Under fourth picture, *bark* should be *fish*  
1127 *Tomatoss*, line 12, column 1, should read *tomato seed*  
1369 In the bottom picture the broken ship is shown instead of the whole ship  
1440 The second question should follow the other quicksilver questions on page 1434  
3971 Common salt is *sodium chloride*, not *sodium chlorate*

## THE CHILD'S BOOK OF ALL COUNTRIES

- 186 In line 13, column 1, *North Eastern line* should be *North British*  
264 There are a few slips in some copies of the map of industries, owing to the fact that industries have died out, so that the occupations of people change. The industries for CUMBERLAND should be copper, iron, and lead mining, making lead pencils, iron working. BARROW IN FURNESS, building ships, working flax and jute. WOLFFRAMPTON, locks, tools, gas and water pipes. LISWICH, agricultural implements. SOUTH WALES, coal mining. STRAUB, umbrellas and woollen goods. BRISTOL, sugar and sweets. BARNSTABLE, furniture and pottery. SWANSEA, coal mining and copper smelting. For MONTOMERY read NORTH WALES.  
267 *Port of Glasgow*, line 18, should read *Port Glasgow*  
517 For *I arrow*, top of column 2, read *farrow*  
746 *Edward I was fought* should read *Edward II*  
747 Under the middle picture the words *the prince* should read *Piers Gaveston*  
753 *Wife of Edward IV* should read *wife of Henry VI*  
799 *Discovered Lapland* should read *Newfoundland*  
2588 *Strasbourg* should read *Strassburg*  
2588 In column 2, line 49, instead of *taking it in two months' time*, read *which, in spite of all their efforts, they could not take*  
2960 *Winklernd* should read *Winkelried*  
3458 For *manufacturers* in last line read *factories*  
4387 The name of volcano is *Aguia* not *Aqua*.  
4499 The Falls are wrongly named. They are in Northern Brazil, and are called the Iguzzu Falls.  
4506 In column 1, line 57, read *fourteen* instead of *seventy*

## THE CHILD'S BOOK OF POETRY

- 45 The third line should read "a river of crystal light"  
*Sung*, in second verse, should be *sang*  
314 *Daughters*, in the introduction to the first poem, should read *granddaughters*  
2915 "The Winter Wind" is from "As You Like It," not from "King Lear"  
4527 and 4852 *Procter* should be *Proctor*

## THE CHILD'S BOOK OF MEN AND WOMEN

- 121 The Mediterranean is a sea, not an ocean. The difference is simply one of size.  
587 *Robert Stephenson* should read *George*  
394 *Lord Brassey* should read *Mr Brassey*  
684 *Edison* was born in 1847  
1219 *Grimson*, in first paragraph, should read *son*  
1730 *Fielding* was born in 1707.  
1732 *Goldsmith* died in 1774.  
1836 Title of bottom picture should read *Charles, James, and Mary*  
1908 *Frances Ridley Havergal* died in 1890.  
2150 *Frances Bly* should read *Peguelly Bay*  
2468 1737 should read 1736  
2463 *Joseph Hulls* should be *Jonathan Hulls*  
2706 *Edward*, in 24th line of first column, should read *Henry*

## THE CHILD'S BOOK OF ITS OWN LIFE

- 2100 In the tooth powder recipe the word *magnesia* should read *precipitated chalk*

## THE CHILD'S BOOK OF STORIES

- 423 *Peter the Hermit* should read *Peter of Moron*  
608 *Silenas* should read *Silenas*  
1792 For *late in October* read *late in November*.  
1795 *Bunderboe* should read *the giant*  
2172 For *Les Miserables* read *Les Misérables*  
2298 *Sparz*, under the picture, should read *scrub*  
2847 *Starkey* should be *Smee*

## THE CHILD'S BOOK OF FAMILIAR THINGS

- 61 Under the top picture read *wire called a plug into a hole called a jack*  
1144 *Wheat*, line 18, first column, should be *oats*  
2819 The descriptions under the Bee pictures are not quite clear. The first should be, "The first picture shows how bees are driven from the combs in the old straw hive by the modern bee keepers, instead of suffocating them with sulphur fumes, which used to be done to obtain the honey they had stored." In the middle paragraph, *pimps* should read *puffs*, and instead of *section* we should say *frame*.  
In the last paragraph, the second sentence should read "We start each section with a thin sheet of wax." The last sentence should be "Each time we take out a section full of honey we put in other sections, like those in the left hand picture, containing new wax."  
3103 Under bottom left hand picture read *makes holes with an awl through the wall, and sews the outside sole on to this with waxed thread*  
3323 The third picture is upside down

## THE CHILD'S BOOK OF NATURE

- Contents, vol 5. Life of the Ant World should be page 2941  
1381 Bottom picture should read thus. *The ringed snake shown in this picture is seldom seen in England now*  
1517 The birds in large picture are partridges, not grouse, the grouse is shown underneath, on the left  
1627 The words *the only* in the description of sheath bills should be omitted  
1629 Under second picture read *black backed* instead of *black beak*  
2679 For *big carp*, under seventh picture, read *barbel*.  
4712 In column 2, *bus nett* should read *burnet*  
3952 Near the end, *pansy* should read *tansy*

## THE CHILD'S STORY OF THE EARTH

- 4371 The picture referred to in the first column in line 11 is on page 4370

## THE CHILD'S BOOK OF SCHOOL LESSONS

- 441 Under bottom picture read *This picture shows how the wash might see the curves*  
1295 In line 20, column 2, *radius* should be *diameter*  
3711 *Virginius Puerisque* is by Stevenson, not Ruskin

## FRENCH

- 260 In line 22, *Ou certainement* should read *Ou certainement*  
1296 *Avoir celui ci* should read *Avoir celle ci*  
1408 *Un portemanteau* should read *une valise*  
1624 In first line, *invites* should read *invités*  
1624 In line 13, *Je l'ai invité* should read *J'ai invité*  
1938 *Contente*, in line 4, should read *contents*  
2050 *J'étais*, in the last line, should read *J'étais*  
2778 *Protégérait*, near end of first story, should be *pro ligitrait*  
3078 *Il*, in line 16, first column, should read *ils*  
3204 In column 2, line 6, *s'inquieta* should be *s'inquieta*.  
3788 *Diner*, in French tale, should read *dinner*  
3788 *Terrible*, in French tale, should be *terribles*  
3857 *Cris*, in last paragraph, should read *cri*  
4135 In line 36 of first column, for *la re id le*  
4884 *Le table* should be *La table*

## THE CHILD'S STORY OF THE BIBLE

- 121 The dishonourable woman spoken of was *not* the King's wife, but the wife of his minister, Potiphar

Africa, physical features, 1203  
 railways, 1262  
 maps, 143, 1253

SEE ALSO NORTH AFRICA, SOUTH AFRICA  
 AND MAPS OF COUNTRIES

Africaner, influenced by Moffat, 3444  
 After-images, what they are, 2019  
 Agamemnon, led the Trojans, 339  
 palace discovered, 3122  
 Agatha St., her martyrdom, 953  
 Age, why we grow old, 2281  
 Agesander, partly made the Jacobson, 4166  
 Agincourt, battle of, 752, 2703  
 a priest blessing the troops, picture, 751  
 Agnes of the Saxon, story, 1253  
 Agnes, Lady, of St Dunstan's Tower,  
 legend, 3112  
 Agouti animal, 502, 722, picture, 719  
 Agra, city in India, 1530  
 Agrícola, built forts, 359  
 governed in Britain, 827  
 Agricultural art, grows crops, 2918  
 Agrimony, what it is like, 1522, 1070  
 pictures, 1291, 4667  
 Azrippa I., killed St James, 5182  
 Agrippa II., Paul appeared before, 4755  
 Agrippina, poisoned her husband, 526  
 picture, 526  
 Agna, Volcano de, in Guatemala, 1387  
 see correction on page 5295  
 Ahab, rebuked by Samuel, 128  
 Elijah and King Ahaz, 1831  
 how he robbed J. Naboth, 2011  
 was slain in battle, 2012  
 Ahab and Jezebel, picture, 2011  
 Ahasuerus, king of Persia, 2047, 5061  
 Ahaz, king of Judah, 1975  
 Abaziah, king, was slain by Jehu, 2011  
 Ahijah of Shiloh, prophet, 1072  
 Ahmedabad, Jain temple, picture, 2897  
 Ahirman, a god of the Zoroastrians,  
 3000  
 Al, a kind of sloth, 920  
 Aidan, was a missionary, 512  
 Ainos, settled in Japan, 4148  
 Air, is full of tiny creatures, 25  
 the gases it contains, 763  
 is part of the earth, 396, 701, 3601  
 its weight, 697, 1127, 1574  
 ground air, what it is, 919  
 air, fire and water, 955  
 is always changing, 1128  
 is made of gases, 1130, 1216  
 its pressure, 1575, 3941  
 has tides, 1678  
 fresh air and healthy lives, 1787  
 why it is fresher after rain, 1859  
 how it is renewed, 2077  
 as a food, 2890  
 stops the light of the sun, 3691  
 dissolves in water, 376  
 its specific gravity, 1316  
 is necessary to sound, 3863, 4581  
 where the bad air goes, 4550  
 why it seems hot before thunder, 4904  
 how it is kept round the earth, 5024  
 Air-breathing animal, picture, 27  
 Air-cells, the ending of the bronchi, 1636  
 Air-passages, in body, picture, 1635  
 Air-waves, can be felt, 3750  
 Air Force, a waterfall, 1104  
 Airships, pictures, 2689  
 Airy, Sir G. B., made maps of the skies,  
 1862  
 opposed laying Atlantic cable, 2174  
 portrait, 1355  
 Aix-la-Chapelle, town of Germany, 2752  
 Akbar, ruled over India, 1696  
 pictures, 1694, 1695  
 Akkad name for Chaldaea, 4974  
 Akkadians, people of Mesopotamia, 1074  
 Alabaster, is a form of salt, 1800  
 Aladdin, and the wonderful lamp, story,  
 with picture, 71  
 Alanc, attacked Rome, 83, 5263  
 Alarum clock, 1536  
 Alaska, country, 1244, 2070  
 Alban, St., how he gave up his life, 104  
 Albania, conquered by the Turks, 906  
 part of the Turkish dominions, 2221  
 national costume, picture, 3225  
 Albatross, life-story, 1023, picture, 1627  
 Albert, Jeanne d', queen of Navarre, 1654  
 Albert, prince consort, 1257  
 Albert Hall, London, echoes in, 1587, 4584  
 Albert Memorial, 5004, picture, 5010  
 Albert Nyanza, lake, 146, 4260  
 Alberta, added to Canada, 1248

Albertus Magnus, portrait, 1625  
 Albi, its cathedral, 2596  
 Albuera, battle of, 4564  
 Albusan, what it is, 1571, 1216  
 Alchemy, the beginning of chemistry, 1916  
 Alcohol, how it is the cause of, 1172  
 its effect on the body, 1186, 1163, 3316  
 the different kinds of, 1871  
 the enemy of life, 3494  
 its specific gravity, 1510  
 has a effect on the brain, 1142  
 death rate caused by alcohol, 1253  
 Alcott, L. M., her story, 1118, 1119  
 Alcibiades, monk, helped Charlemagne, 2194  
 Alder, what they are, 1873  
 Alder, how it grows, 1184  
 berry bearing alder, 1614  
 Aldgate, why it is so called, 312  
 Aldrich, Thomas Bailey, see Poetry Index  
 Alecco, paddle boat, picture, 2471  
 Alemanni, settled in Switzerland, 2362  
 Aleut, an exploring vessel, 1721  
 Aleutian Islands, in water, 2870  
 Alexander, name derived from, 2514  
 Alexander the Great, king of Macedonia, his  
 compounds, 1400, 1696, 1700, 2065, 710  
 pictures, 1403, 5061  
 Alexander VI., pope, beautified the  
 Vatican, 1946  
 invited Bramante to Rome, 4950  
 engaged by Savonarola, 2516  
 Alexander I. of Russia, his reign, 1631  
 Alexander II. of Russia, monument, 1222  
 his reign, 1632  
 Alexander III. of Russia, 1594, 1632  
 Alexander I. of Scotland, 1690  
 Alexander II. of Scotland, 1682  
 Alexander III. of Scotland, 1682  
 Alexander, G. F., wrote hymns, 1994, 4553  
 name, see Poetry Index  
 Alexandra, queen, her early home, 3595  
 Alexandria, its great library, 2892  
 its foundation, 1790  
 its buildings, 4792  
 Cleopatra's Needle set up, 5003  
 Alfred the Great, his life, 512  
 founded London, 1123  
 how he lived the time, 1575  
 what kind of king he was, 2791  
 pictures, 517  
 Algeria, how they telegraph there, 4311  
 Arab patriot of story, 3167  
 Bag, picture in colour, 1014  
 Algiers, its climate, 2369  
 taken by the French, 4261  
 picture, 1255  
 Alhambra Palace, 3158, picture, 3164  
 All was fourth caliph, 1578  
 All Baba and the Forty Thieves, story,  
 with picture, 733, 715  
 Alice in Wonderland, how the story was  
 written, with picture, 1172, 1171  
 the story, with pictures, 2928, 3054, 3111  
 Alisban, Leon, see Poetry Index  
 Alkalies, what they are, 1799  
 All my eye and Betty Martin, 3505  
 All Red Route what it is, 1364  
 Allah, god of Mohammedans, 1587, 3072  
 Allan, Sir William, his picture of Scott, 2409  
 Allan-a-dale, his marriage, 2693  
 Alleghany Mountains, 2691  
 Allegory, what it is, 693, 4120  
 Allingham, his life-story, 1221, picture,  
 1229  
 Allingham, William, see Poetry Index  
 Aliteration, what it is, 113  
 Alloys are mixed metals, 1870  
 All's Well that Ends Well, story of the  
 play, 87  
 Alma river, passage of, 3632  
 Alma-Tadema, Miss L., see Poetry Index  
 Alma-Tadema, Sir L., his Joseph, 2011  
 Almond, how it grows, 1966; pictures,  
 1072  
 Almond jumbles, how to make, 3285  
 Alphabet, how to learn the alphabet, 91  
 the child's new annual alphabet, 92  
 how it was formed, 690  
 how the word is made up, 2773  
 curious things about it, 3392  
 Alfonso XIII., king of Spain, 1362  
 Alf nee, are mountain plants, 1930  
 Alps, the, 2953, pictures, 481, 2882, 2958  
 Alsace, given up to Germany, 2277  
 taken by France, 2528  
 Altai Mountains, in Siberia, 3746, 3932  
 Alum-shale, where it is found, 4216  
 Aluminum, its specific gravity, 3816

Alva, duke of, persecuted the Protestants  
 of Holland, 3361, 3360  
 Amalthea, found, 2222, 1818, 1624  
 destroyed by Saul, 1476  
 Amalgams, mixtures of in mercury, 1864  
 Amariyllis, family of plants, 5272  
 Amazon, river, size, 4494, picture, 4493  
 Amazon ant. preys on other ants, 2918  
 Amazons, warlike women, 73  
 a queen, picture, 1476, by Hercules, 3164  
 Ambato woman, grinding, picture, 4572  
 Archer, attracts flies, 1421, 2114  
 the beginning of electricity, 1253  
 Ambrosia, 4260, the spirit of, 1036  
 Ambrosius, his marriage, 5020  
 Ambrose, St., wrote hymns, 1936  
 134 life, 3942  
 and the de laus, picture, 1931  
 Amehoboth III., list of Egypt, 4160  
 Amaphis III., king of Egypt, 1970  
 America, how Columbus discovered it,  
 with picture, 37, 5  
 how it got its name, 39  
 how long it takes to go there, 179  
 how its discovery was celebrated, 2015  
 its first people, 4484  
 famous American writers, 3047  
 SEE ALSO CENTRAL STATES AND NORTH  
 AMERICA AND MAPS OF COUNTRIES  
 American War of Independence, 1909  
 1920, 1922, pictures, 1913  
 Amberst pheasant, 1515, picture, 1516  
 Amiens, town of France, 2708  
 Ammon's temple at Karnak, pictures, face  
 4760 in colour, 4791  
 Ammonia, what it is, 1216, 1387, 1799  
 why it cleans things, 2246  
 Ammonites, attacked the Israelites, 1096  
 Amica, life story, 1094, 1097, 2037, 2118  
 picture, 1095, 1099  
 Amphibia, what they are, 729, 730, 2133  
 Amsterdam its trade, 2534, 3162, 3464  
 built on islands, 4550, picture, 3154  
 Anu Baria, river, 3682  
 Amundsen, explorer, picture, 4725  
 Anur, river, its length, 1752  
 Anaconda, snake, 1774, picture, 1377  
 Anagrams, 5002, 5114  
 Ananias, his vision and visit to Saul, 4283  
 Anatholius, St., wrote hymns, 1995  
 Anchesis, father of Jesus, 5280  
 Anchor, its parts, 4565, pictures, 1566  
 Anchovies, sprats sold as, 2536  
 Ancient lights, its meaning, 2829  
 Andalusia, province of Spain, 3355  
 Andersen, H. C. Pfe, 1468, 4546, 3598  
 his dream of fairland, picture, 1469  
 Anderson, Vida, portrait, 2685  
 Andes Mountains, their extent, 1481,  
 4197, 4578, picture, 2730  
 Andri, S. A., tried to reach the Pole,  
 4726  
 Andrew, St., patron saint of Scotland, 555  
 cross of St Andrew, 899, 5180  
 said to have come to Scotland, 2330  
 flag of St Andrew, 2333  
 became a disciple, 2958  
 what is known of him, 5179  
 pictures, 5179, 5187  
 Andrew, St., of Crute, wrote a hymn, 1995  
 Androcles, and the lion, story, with  
 picture, 1704  
 Andromeda, set free, with picture, 1049  
 Amnesia, meaning of word, 3177  
 story about the amnesia, 493  
 what it is like, 4290  
 different kinds, 1770, picture, 1489  
 Aneroid barometer, 4016, picture, 3941  
 Anelica, plant, 5038, pictures, 5031  
 5035  
 Angelico, Fra. his life, 3987, 1048  
 his picture of Peter preaching, 3681  
 pictures of him, 3985  
 Angle, the different kinds, 218, 1023  
 size of, 2686  
 Angle of incidence, what it is, 5177  
 Angler, and fish, fable, with picture, 3855  
 Angler fish, 2537, picture, 2538  
 Angles, inhabitants of England, 509, 512  
 Anglo-Saxon Chronicle, 514, 572  
 Anglo-Saxon remains, in British Museum,  
 510  
 Angola, Portuguese West Africa, 1262  
 Angora goat, 372  
 Anquish, king of Ireland, 3211  
 Animals, difference between animals and  
 plants, 19, 128, 364  
 the story of the animals, 25, 30

Ashes, what they are made of, 2506  
 Asherah, the heathen god, 2105  
 Ashur, god of Assyria, 4980  
 Ashur-bani-pal, king of Assyria, his  
   power 1980  
   killed his brother, 4982  
   called himself king, 5037  
   pictures, 1971, 4981  
 Ashur-nazir-pal, king of Assyria, remains  
   of palace discovered 4977  
   portrait in stone, picture, 4981  
 Asia, history of south western Asia, 3873  
   its sandy deserts, 1122  
   SEE ALSO UNDER CENTRAL ASIA AND  
   NAMES OF COUNTRIES  
 Asia Minor, gained by Seljouk Turks, 3154  
   part of Asiatic Turkey, 1873  
   physical features and historical interest,  
   3574  
   conquered by the Arabs, 3876  
   invaded by the Seljouks, 3878  
 Asiatic Turkey see Turkey in Asia  
 Askew, Anne, put to death, 5065  
 Asoka, great ruler in Hindustan, 1696  
 Aspen, tree, 4488 4600 [2191]  
 Ass, two loaded asses, fable, with picture,  
   the word in different languages, 1269  
   the ass in the lion's skin, fable, with  
   picture 3855  
 Assaye, battle of 1802  
 Association football, how to play it, 1929  
 Association of ideas, what it means, 4593  
   how it works, 1939  
   how to think, 5025  
   in memory, 5029  
 Assuan, dam across the Nile, 4260  
 Assyria, greatness of the kingdom, 2120  
   destruction of army, with picture, 2217  
   writing, on clay, 3863  
   sculpture in, 4160  
   war with Egypt, 4785, 4950  
   story of its past, 1971  
   conquest by Babylonians, 6057  
   pictures, 5097, 1371, 1971, 1973  
 Ashtar, heathen god, 1884  
 Asbury, John, portrait, his life 1478  
 Aster, what the word means, 3177  
 Astolat, Lily Maid of Astolat story, 1205  
 Astrakhan, port of Russia, 3628 3750  
 Astrology, study of the stars, 1910  
 Astronomers, story of 185  
 Astronomy, what it tells us, 1055  
   world in the sky 1040  
   the wonder of the sun, 2081  
   the moon the lamp of night, 2219  
   the wonder of the sea and tide 2170  
   the sun's family of worlds, 2123  
   comets, meteors, and sky dust, 2495  
   the stars as we see them 1000  
   the glory of the stars, 2715

Attila, leader of Huns, driven out of Gaul,  
   2517  
   defeated in Germany, 2522, 2933  
   attack on Roman Empire, 5232  
 Attraction, the power by which the earth  
   holds us to itself, 1082  
 Auber, Harriet, wrote a hymn, 1098  
 Aubrietia, how to treat the seeds, 807  
 Auckland, province of New Zealand, 1456  
 Audubon, people who think by sound, 4014  
 Augean stables, cleansed by Hercules, 5163  
 Augsburg, city of Germany, 2754  
 August, how it got its name, 2071, 4519  
 Augustan Age, what it means, 524, 5206  
   name given to Anno's reign, 1257  
 Augustine, St., came to England, 510,  
   2157, 2329  
   pictures, 511, 2159  
 Augustus, Octavian Caesar, first Roman  
   emperor, 407  
   his rule, 523  
   mourned over the Roman army, 2522  
   gave name to month August, 2071, 4519  
   defeated Cleopatra, 5003  
   his great power, 5269  
   pictures 524, 4519, 5259  
 Auk, different kinds, 1030  
 Auld Robin Gray, song, with picture, 3730  
 Aunt Sally, garden game, 868  
 Auricle, chamber of the heart, 1582  
 Auricula, kind of primrose, 2012, 5271  
 Aurora, goddess, Reni's picture, 1589  
 Aurora borealis, what it is, 5251  
   why it appears in the north, 5252  
   its electrons 5252, picture, 3853  
 Aurungebo, king of India, 1698, portrait,  
   1695  
 Austen, Jane, her life, with portrait, 2593  
   at her desk, picture, 2591  
 Austerlitz, town in Bohemia, 2630  
   battle of, 2276, 2530, 1611  
 Austria, Alfred: see Poetry Index  
 Australasia, what it consists of, 1400  
 Australia, its size, 70  
   the men who found Australia, 293  
   its products, 293, 1358 1704  
   animals, 170, 476 1356, 1364  
   how it became a British colony, 1115  
   the great south land, 1355  
   railways, 1300  
   population, 1364  
   part of a continent, 3004  
   pictures, 292, 295, 1357, 1359  
   map of 1355  
 Bag, of, picture in colour, 1042  
   SEE ALSO IN HISTORY AND GEOGRAPHY AUSTRALIA  
   AND NAMES OF COUNTRIES  
 Baikal, lake, 1735  
 Australian bear, 920  
 Austria, flag, 1040, picture in colour, 1042

Azale, old name for nitrogen, 3312  
 Azotobacter, microbe in the soil, 3342  
 Azov, town, 3158, 3631  
 Azov, Sea of, in Russia, 3621  
 Aztecs, American tribe, 4552, 4591  
 B  
 B C, what it means, 11, 346  
 Bael, god of Tyre, 1881  
 Babar, founder of Mogul Empire, 1639  
   portrait, 3931  
 Babel, Tower of, building of, 361  
   where it was, 3875  
   its destruction, 4933, picture, 3037  
 Babes in the Wood, story, with picture,  
   1523, 3078  
 Babington, Anthony, his plot, 3089  
 Baboon, 585; picture, 581  
 Baby, why it cannot talk when born,  
   2570  
   why it requires so much sleep, 1181  
   why it cannot stand upright, 3856  
 Babylon, buried city, 23, 24  
   captured by the Persians, 2102  
   capital of Babylonian, 4971  
   its buildings, 4981  
   taken by the Persians, 4934, 5058  
   taken by Alexander the Great, 5061  
   entry of Alexander the Great, picture,  
   1303  
   by the waters of Babylon, picture, 1587  
   capture by the Persians, picture, 2100  
   city, picture, 4975  
   hanging gardens, picture, 4983  
 Babylonia, writing of the Babylonians,  
   3371, 3363  
   story of its past, 1971  
   name adopted, 4974  
   building of cities, 1970  
   brickmaking and agriculture, 4976  
   conquest by Assyria, 1977  
   under the Medes, 1981  
   new empire founded, 4983, 5057  
   links between old and new empires, 1981  
   return of the Jews, 5053  
   temple of Jerusalem destroyed by  
   Babylonians picture, 2305  
 Bablyroussa, wild pig, 170, picture, 373  
 Baccaria, his discovery in electricity, 2118  
 Bacchus, spirit of the vine, 805  
 Bach, Johann Sebastian, musician, story  
   of him as a child, 2043  
   his life, 3241; picture, 3242, 3247  
 Bachelor's buttons, origin of name, 3177  
   flower of the meadow buttercup, 4-7  
 Backbone, how it is made, 712, 2417, 2443  
   animals without a backbone, 727  
   animals with a backbone, 729  
   pictures, 722, 2441  
 Bacon, Francis, birth and death, 1980



Behring, Vitus, explorer, 3630, 4722  
 Behring Straits, 3630  
 Bel, a heathen god, 2401  
 temple of, picture, 1975  
 Belcher, Sir Edward, picture, 1725  
 Belfast, city of Ireland, 80  
 its industries, 263, 261, 287  
 Belfast, town in France, 2394  
 Belgae, Celtic tribe, 1457  
 Belgium, its history, 3455  
 became a kingdom, 3404  
 its towns and industries, 3464  
 flag, picture in colour, 1641  
 map, 3463  
 Belgrade, capital of Servia, 3222, 3224  
 picture, 3218  
 Belin, Monsieur, slave's devotion, 1914  
 Belisarius, Roman commander, 2912, 3162  
 with his guide, picture, 3153  
 Belit, god of Assyria, 4080  
 Bell, electric, how to fit, 2567  
 Bell, name the Brontës wrote under, 2508  
 Bell, Graham, patented a telephone, 4317  
 Bell, Henry, and the steamboat, 2470  
 portrait, 2467  
 his steamboat, the Comet, picture, 2469  
 Bell, John, work on Albert Memorial, 5004  
 Bell the cat, fable, and picture, 426  
 what it means, 3065  
 Bell-bird, its call, 1718 picture, 1736  
 Bell-glass, how to use, 3071  
 Bell Rock lighthouse, 54  
 Belladonna, what it is made from, 1190  
 Belladonna lily, 5272  
 Bellflower, 2042, 1112, 1466  
 Bellini family, artists, 4466  
 Bellini, Vincenzo, composer, 1252  
 Beloochis, tribe, picture, 3949  
 Belshazzar, king of Babylon, his feast,  
 2402, 4084, picture, 2400  
 Beluga, name for the white whale, 1088  
 Ben Hur, story of the book, with picture,  
 5225  
 Benares, king of, and his ministers, story,  
 and picture, 4927  
 Benedict, St., his life, and picture, 902  
 Bengal, how it became British, 1700  
 sugar cane grown, 5115  
 Benjamin, youngest son of Jacob, 687  
 Bennett, William Cox see Poetry Index  
 Bent grass, picture, 2000  
 Benham, Jeremy, life and aims, 1812,  
 4844, portrait, 4841  
 Bentvoglio, Cardinal, a patron of art, 4956  
 Benue, tributary of the Niger, 4254  
 Benzene, its many compounds, 1873  
 Benzine, takes grease out of material, 4456  
 Benzoline, inflammable liquid, 1280  
 Branger, Pierre de see Poetry Index  
 Berengaria, queen of Castile, 4717  
 Bergen, fish market of Norway, 3602  
 Berius, Vitus see Behring  
 Berkeley, what the name means, 3401  
 Berkeley, George, what he taught, 4621  
 portrait, 4625  
 Berkshire, what the name means, 3401  
 Berlin, the capital of Germany, 2638  
 what kind of city it is, 2639, 2747  
 picture, 2746  
 Berlin, Treaty of, signed, 3222  
 Bermudas, British islands, 1878  
 Bernadotte, Swedish royal family, 3508  
 Bernard of Clairvaux, St., and the Second  
 Crusade, 1889  
 wroth hymns, 1995  
 his life, 2981, pictures, 3981, 3989  
 Bernardine nun, digging, picture, 2395  
 Berne, capital of Switzerland, 2992, 2964  
 picture, 2963  
 Bernini, Giovanni Lorenzo, sculptor, 1161  
 Berries, found on downland, 4715  
 Bertha and Undine, story, 4005  
 Bethany, where Martha and Mary lived,  
 3892, picture, 1199  
 Bethlehem, picture, 2711  
 Betony, flower, picture, 4486  
 Betrothed, The, story of the novel, 1401  
 Betts, Winnie, portrait, 2787  
 Bevel, use, with picture, 1923  
 Beverley, what the name means, 3401

## BIBLE

### THE CHILD'S BOOK OF BIBLE STORIES

The following are the actual headings of the chapters in this section; the separate entries appear below, and in their proper places in the Index

Bible, the story of our Bible, 11  
 heroes of the Old Testament, 121  
 heroines of the Old Testament, 213  
 the Bible story of creation, 355  
 Abraham, the friend of God, 471  
 the story of Isaac and his sons, 629  
 Jacob the wanderer, 685  
 Joseph the dreamer, 807  
 the rise of Moses in Egypt, 911  
 the march in the desert, 1023  
 Israel marches forward, 1093  
 Samson, the strong man, 1259  
 the story of Ruth and Naomi, 1262  
 Samuel and the great change, 1327  
 the first king of Israel, 1477  
 David the shepherd king, 1480  
 the Psalms of King David, 1593  
 the reign of King Solomon, 1671  
 the end of Solomon's glory, 1733  
 Elijah and King Ahab, 1882  
 Elijah and Elisha, 2011  
 God and a man, 2129  
 Isaiah the poet and prophet, 2215  
 the destruction of a nation, 2305  
 Daniel and the kings, 2401  
 how Esther saved her people, 2547  
 between the old and the new, 2629

THE LIFE OF JESUS  
 the Light of the World, 2711  
 John the forerunner, 2712  
 Jesus in the wilderness, 2803  
 Jesus begins His preaching, 2953  
 Jesus and the Pharisees, 3105  
 the teaching of Jesus, 3063  
 the approach to the end, 3109  
 the betrayal of Jesus, 3321  
 the trial of Jesus, 3423  
 Calvary and after, 3513  
 the birth of Christianity, 3683  
 the story of the Gospels, 3811  
 stories from the Gospels, 3847  
 the word pictures of Jesus, 3950  
 the sayings of Jesus, 4103

THE KING OF CHRISTIANITY  
 Saul of Tarsus, 1297  
 the conversion of Saul, 4279  
 St Paul at Damascus, 4447  
 Paul and Peter meet, 4531  
 Paul saves Christianity, 4603  
 how Christianity spread, 4751  
 the peril of Paul at sea, 4793  
 the last days of Paul, 4909  
 John, the beloved disciple, 5003  
 the twelve apostles, 5179  
 the winning of the world, 5231

Bible, what it is, 11  
 how it got its name, 12  
 how we got our English Bible, 14  
 was chained in churches, 15  
 contains the finest English writing, 2330  
 translated into German, 2527, 5237  
 means book, 2773  
 Bicarbonate of lime, 1509, 5250  
 Biceps, arm muscle, 2629, picture, 2627  
 Bichromate battery, with picture, 1078  
 Biconcave, what it means, 1381  
 Bicycle, how we got it, 2835  
 why it keeps up, 2884  
 how to mend a puncture, 4243  
 the rules of the road for cyclists, 4299  
 how to clean it, 4156  
 how it moves without pedalling, 1001  
 how it is made, pictures, 2836  
 Biddenden maids, legend, 4277  
 Bienna, Lake, in Switzerland, 2900  
 Biennial, what it is, 563, 3734  
 Big Ben, of Westminster, story of, and  
 picture, 1536, 1546  
 Bight, a coil in a rope, 765  
 Biliberry, 4831, picture, 4837  
 Bile, substance in the body, 2345, 2346  
 Bilde, of a ship, 1564  
 Bill of Rights, passed, 899  
 Billion, a number, 859, 856  
 Bindweed, small field convolvulus, 4117  
 great bindweed, picture, 4189  
 Bingo, game, 334  
 Biology, the study of life, 3594  
 Burch, how it grows, 4483, pictures, 3185  
 Burehlegs, party in Norway, 3594  
 Bird see Birds  
 Bird-eating spider, 3303, picture, 3701  
 Bird-girl, with golden wings, story, 1796  
 Bird of Paradise, 33, 1738, pictures, 1711  
 Bird's-foot trefoil, 1292, picture, 1291  
 Birds, their origin, 28, 731  
 of long ago, 28, 3680  
 their song, 177, 1599

Birds, why they fly so high, 177  
 how they find their way, 507-  
 are warm blooded, 615  
 build their nests by instinct, 942  
 why they do not fall, 944, 955  
 that cannot fly, 1123  
 how they fly, 1423, 2688, 3510  
 their ears, 1135  
 that serve us, 1513  
 of the ocean, 1625  
 of beauty, 1737  
 how they protect themselves, 1737  
 their eggs, 1789  
 that hunt, 1849  
 that swim and climb, 1951  
 birds used to have teeth, 1963, 2093  
 the singing birds, 2051  
 familiar bird friends, 2209  
 Christmas-tree for the birds, 2251  
 how long they live, 2325  
 why they cast their feathers, 2329  
 why they cannot fly if dropped from a  
 height, 2337  
 what wakes them up, 3435  
 their eyes, 4217  
 how to make a bird museum, 4608  
 why caged birds' claws are cut, 5168

PICTURES OF BIRDS  
 singing, 177, 2053, 2055, 2059  
 flying, 178, 504  
 that forgot how to fly, 1425  
 that run, swim, or climb, 1431  
 that are shot for sport, 1516  
 that live on inland waters, 1621  
 that hunt in the sea, 1627, 1629, 1631  
 of beauty, 1736, 1739, 1741-43  
 their wonderful colours, in colour, 1741  
 eggs, in colour, 1744  
 a Christmas tree for birds, 2251  
 Bird's-eye primrose, 5036, picture, 5035  
 Bird's-nest orchid, 3830, 3931, 4495  
 picture, 4493  
 Birds' nests, wild carrot flowers, 4420  
 Birds-eye, germaner speedwell, 4191  
 Birdseye view, what it is, 18, picture, 19  
 Birgus latro, a crab, 2586  
 Birkenhead, the men of the Birkenhead,  
 story, with picture, 1804, 1802  
 Birmingham, manufacture, 206, 208, 899  
 how the name has changed, 3401  
 Birs Nimroud, mound, 1983, picture,  
 4984  
 Birthright, what it means, 3763  
 Biscuit, means twice cooked, 2773  
 Bishop, The, rock, picture, 1058  
 Bishop, Sir Henry, composed songs, 3741  
 Bismarck, prince of, his policy, 2639  
 his fall from power, 2748  
 his statue in Berlin, 2748  
 and Germany's African colonies, 2756  
 pictures, 2641, 2756  
 Bismarck Archipelago, 2756  
 Bismarck Island, houses, picture, 1459  
 Bison, wild animal, 1431, 1432  
 Bites, how to treat them, 3799  
 Biting stonecrop, 4708, picture, 4709  
 Bito and Cleobis, story, 1501, 2301  
 Bito see Bito  
 Bitter almond, its uses, 1980  
 Bitterling, fish, 2691  
 Bittern, bird, 1954, picture, 1953  
 Bittersweet, the woody nightshade, 4193  
 Bivalve, has a shell in two halves, 2588  
 Biwa, Lake, in Japan, 4156  
 Buzet, Georges, composed Carmen, 3232  
 Black, colour, how to make, 859  
 why white is cooler than black, 1438  
 Black-backed gull, 1628, picture, 1629  
 see correction on page 5260  
 Black-beetle, name of the cockroach, 3111  
 Black bryony, 4193, picture, 4189  
 Black-cock, 1518, picture, 1517  
 Black Country, district in England, 268  
 Black currant, 806, picture, 677  
 wild black currant, picture, 1491  
 Black Death see Plague  
 Black Diamond, story, and picture, 3570  
 Black Dwarf, The, story of the novel, 1497  
 Black elder, what it is, 1970  
 Black Forest, 2754, picture, 2751  
 Black-gams see Black cock  
 Black-headed gull, 1628, picture, 1629  
 Black-headed nun, bird, 1748  
 Black knapweed, 1832  
 Black nightshade, 4424, picture, 4714  
 Black people, reason for their colour, 1041  
 why they are civilised than white people, 4208  
 Black Prince see Edward



- Bottle, how to clean bottles, 1456  
 how a glass bottle is made, pictures, 1194  
 Bottle-nose whale, 1082  
 Botzaris, Mark, Greek leader, 3219  
 Bouch, Sir Thomas, built Tay Bridge, 1826  
 Boucault, Dion, wrote 'The Wearin' o' the Green, 1743  
 Boudoir, what it means, 2773  
 Boughton, G. H., his picture of inhabitants of North America, 2019  
 his picture of Milton and Marvell, 3337  
 his picture of Dutch lasses, 3461  
 Bougnereau, William, his picture of Jesus on the way to Calvary, 3070  
 Boulton, Matthew, made steam engines, 588, 681, 2168  
 Bounce about, garden game, 868  
 Bourville, garden city, 2881  
 Bowl, how it is made and works, 2345  
 Bower-bird, its life story, 1745  
 Bowhead whale see Right whale  
 Bowles, Miss, and her dog, picture by Reynolds, 4592  
 Bowles, William see Poetry Index  
 Bowline knot, and pictures, 765, 766  
 Bows, garden game, 868  
 Bowring, Sir John, his work, 2000  
 portrait, 1999  
 Bows and arrows, game, 3725  
 Bowsprit, of a ship, 3913, 1505  
 Box, right way to draw a box, 773  
 Boxer rising in China, 4044, 4152  
 Boy, who walked to China, 34  
 who saved his family, story, 192  
 whom France forgot, story, 299  
 whom France forgot, story, 310  
 dead boy, in the Canterbury Tales, 639  
 at the giant's castle, story, and picture, 736  
 boy and the ambassador, story, and picture, 743  
 who forced back an army, story, 744  
 who would not fight against freedom, story, 1634  
 boys and the frogs, fable, and picture, 2303  
 why boys are stronger than girls, 2418  
 gallant deed of a boy king, story, 3234  
 who had no name, story, 3472  
 who saved a crew, story, 3834  
 who took a man's place, story, 1010  
 a boy's love for his mother, story, 4071  
 who saved the boat, story, 4178  
 who slept in the king's chair, 4642  
 why a boy's voice breaks, 4827  
 who changed into a toy soldier, story, and pictures, 5071  
 who became a king, story, 5075  
 boy and his dog, picture, 783  
 Boy scouts, hints for boy scouts, 4032  
 Boyars, Russian nobles, 3628  
 Boyle, Robert, scientist, life, 2114  
 his law about gas pressure, 3943  
 portrait, 2113  
 Boyle, Sarah Roberts see Poetry Index  
 Boyne, Lattin of the, 899  
 Brabant, dukes of, in Netherlands, 3458  
 Bracken-fern, how it grows, 4009  
 Bracket fretwork with pictures, 5293  
 Bradford, town of England, 204  
 Bradley, James, life, 1682; portrait, 1655  
 Bradshaw, John, his power in the Commonwealth, 886  
 how Charles II. treated his body, 4610  
 portrait, 1698  
 Brady, Nicholas, wrote psalms, 1097  
 Bragi, god of poetry, 4581  
 Brahama, John, famous tenor, 3740  
 Brahe, Tycho, life, 1637; portrait 1655  
 Brahmanism, religion of India, 2995  
 Brahmaputra, river, rises in Tibet, 3916  
 Brahmas, kind of fowl, 1311  
 Brahmins, Hindu priests, 1532, 1635  
 Brahms, Johannes, composer, 3232  
 Brain, needs food 1132  
 how it controls the heart, 1233  
 how thinking makes it heavier, 1334  
 how bad air affects it, 1783  
 how it is protected, 2242  
 how its centre is diseased, 3109  
 its sleep, 3381  
 its dream, 3404  
 picture of brain, 3433  
 needs to be kept strong, 1363  
 the history of the brain, 2714  
 the parts of the brain, 3775  
 how it is kept strong, 3775  
 how it is kept strong, 4121  
 Brain, how alcohol affects it, 4312  
 its shape, 4444  
 its growth, 4596  
 its size, 1596  
 effect on working of the mind, 1941  
 PICTURES OF BRAIN  
 inside and outside of our brains, 3712  
 man's brain compared with that of other creatures, 3713  
 section across one side, 3718  
 grey matter magnified, 3718  
 showing Broca's area, 3779  
 Brainerd, David, his life, 3484  
 Bramante, Donato, story of his life, 4950  
 portrait, 4945  
 Bramble, what it is like, 4193  
 mountain brambles, 1830  
 Brambling: see Mountain finch  
 Bran, covering of the wheat grain, 2924  
 Brandenburg, attacked by Swedes, 2530  
 absorbed Prussia, 2530  
 Brandon, Mount, its height, 187  
 Brandy-bottle, the yellow water lily, 4980  
 Brass, from copper and zinc, 170, 1870  
 Brassey, Thomas, built railways, 594  
 see correction on page 5296  
 Brazil, brought wealth to Portugal, 3358  
 became independent, 3362  
 its position and size, 4500  
 how it became a republic, 4506  
 its products and trade, 4571, 4572  
 its people, 4571, 4572  
 its connection with Portugal, 4572  
 flag, picture in colour, 1613  
 Indian milkman, picture, 4503  
 Botocudo Indians, picture, 4503  
 Brazil nuts, 1966, picture, 1967  
 Bread, how we get our bread, 1143, 2023  
 contains much water, 1172  
 how yeast makes bread rise, 1872, 3241  
 why it is called the staff of life, 2078  
 why its price changes, 5170  
 how it is made, pictures, 1151  
 proportion of water in it, picture, 1171  
 crumb, through microscope, picture, 2121  
 Breaking bread, what it is like, 4614  
 Breakspear, Nicolas, name of Pope Adrian IV, 2102  
 Bream, fish, 2682, picture, 2683  
 Breathing, what it is, 247, 3942  
 why we get out of breath running, 1131  
 why we cannot see our breath on a warm day, 1434  
 how we breathe, 1631  
 what the breathing centre is, 1638  
 how it varies, 1787  
 how it is affected by light, 1900  
 why our breath rises in the air, 2233  
 why we cannot breathe under water, 3763  
 what happens to the breath we breathe out, 4442  
 air passages in the mouth and throat, picture, 1835  
 how we breathe, pictures, 1637  
 Breccia, rock, 5108  
 Brechan, St. Welsh king, 1277  
 Brecknock Beacons, in South Wales, 187  
 Brecon, how it got its name, 3402  
 Breches boys, use, with picture, 4430  
 Bremen, joined Hansatic League, 2526  
 its shipbuilding, 2750  
 Brennan, Louis, invention of gyroscope, train, 4901, 4902  
 Brennus, besieged Rome, 3554  
 Brer Rabbit, and Brer Fox, 3780  
 and Mr. Bear, 3780  
 the great race, 3787  
 and Miss Cow, 3787  
 and the tar baby, 3853  
 tricks Brer Fox, 4522  
 and his riding horse, 4613  
 helps Brer Tortoise, 4702  
 Brer Tortoise helps Brer Rabbit, 4702  
 Miss Goose a washing, 4701  
 Mr. Henne and Brer Fox, 5079  
 the little sparrow, 5078  
 the bookman, 5079  
 and Mr. Lion, 5040  
 Mr. Buzzard fools Brer Fox, 5203  
 Mr. Buzzard scares Brer Rabbit, 5204  
 how Brer Rabbit discomfited Brer Fox, 5209  
 picture to each story  
 Brezia, who, Payari life, picture, 811  
 Breslau, city of Prussia, 2755  
 Brett, part of France, 2754  
 Brett, their object, 2754  
 Brett, Jacob, laid a cable, 2174, portrait, 2467  
 Brewer, Ebenezer see Poetry Index  
 Brewster, Sir David, improved the microscope, 2320  
 Brian Boru, Irish king, 2020  
 Brice, man who refused a bribe, story  
 Brick, story of a brick, with pictures, how to see through it, with pictures, what to do with bricks, with pictures, how to blow it over, with picture, brick with ancient writing, picture, Bride of Lammermoor, The, story of novel, 1493  
 Bride of the Wandering Prince, story, Bridge, how bridges are made, 1525  
 the different kinds, 1825  
 why bridges are arched, 2323  
 expands in the sun, 2621  
 how to make of reeds and bricks, 131  
 what the bridge of a ship is, 4561  
 why it sways, 4744  
 how some famous bridges were made, pictures 1827  
 Bridge of Sighs: see Venice  
 Bridge-board, game, 331  
 Bridgetown, Barbados, its schools, 181  
 Bridgewater Canal, opened, 1010  
 Brenz, Lake, in Switzerland, 2960  
 Brig, what it is like, 3915, picture, 3915  
 Brigantine, 3915, picture, 3911  
 Briggs, T., her picture of Jesus, 13  
 child, 2955  
 Bright, Charles Tilton, laid the Atlantic cable, 2174, portrait, 2467  
 Bright, John, his work as a reformer, 3703  
 Bright and Cobden, picture, 3705  
 Brighton, old woman at, tale, 1104  
 Brill, how many eggs it lays, 2536  
 Brion, Gustave, his picture, The Land of the Flood, 359  
 Brisbane, city of Queensland, 1360  
 Bristol, its industries, 265  
 see correction on page 5200  
 Bristol Channel, receives the Severn, 181  
 Britain, its early animals, 30  
 discovered by Phoenicians, 141, 5122  
 invaded by Julius Caesar, 400  
 Britannia Bridge, Menai Straits, 1825  
 British Army, in Afghanistan, 3939  
 British Columbia, province of Canada, 1244  
 British Empire, the empire of eternal sun, 1111  
 how it was built up, 1111  
 its people, 1112, 1113, 1117  
 its flags, 1118  
 in Africa, 1875  
 outposts of, 1875  
 the aim of its rule, 1880  
 flags, picture in colour, face 1111  
 the peoples of, picture, 1111  
 SEE ALSO BRITISH ISLES, ENGLAND, &c.  
 British Guiana see Guiana  
 British Honduras, in Central America, 1878  
 British Isles, climate, 31, 185, 1860, 1872  
 the land we live in, 63  
 what they consist of, 64  
 bird's eye view, 64  
 trade, 67  
 their size, 70  
 the work of our island home, 153  
 mountains and rivers, 151  
 agriculture, 185  
 coal supply and fisheries, 190  
 the workers of our land, 201  
 population, 1147, 2309, 4907  
 flag, 231  
 PICTURES OF BRITISH ISLES  
 map, 64  
 railways, 65  
 map, showing their size, 66  
 heights of British Isles, 187  
 Union Jack, in colour, 1911  
 relief map, 3822  
 map, light-houses and lightships, 4426  
 SEE ALSO BRITISH ISLES, ENGLAND, &c.  
 British Museum, its prehistoric room, 116  
 its Aztec room, 310  
 how it was built, 1162  
 Assyrian and Babylonian relief, 4972  
 picture 1159  
 British Navy, how the ships are built, 116  
 from London, 141, 142, 143, 144  
 British people: see British people  
 Britons, race of, 141  
 two British chiefs, picture 351  
 Britany woman, picture, 2325



Byzantium, called Constantinople, 530  
taken by Constantine, 1150  
taken by the Athenians, 5129

SEE ALSO CONSTANTINOPLE

## C

Cabbage, how to grow, 2976, 3176, 3826  
Cabbage butterfly, 2084

Cabinet, how to make from cigar boxes,  
and picture 1880

Cable, Nova Scotia to West Indies, 1878  
how to find where broken, 4550

laid a cable, pictures, 2476, 4551

Cablegrams, how they are sent, 3521

Cabot, John and Sebastian, picture, 709

Cabral, Pedro Alvarez, explorer, 4502

Cacao-tree, gives us chocolate, 2237

Cachalot, see Sp. m. whale

Cactus, 1949, pictures, 3975

Caddis-fly, 3262, picture, 3250

Cadiz, port of Spain, 4363, picture, 3350

founded by Phoenicians, 5122

Cadmon, early English poet, 113, 512

Caffeine, its effect on the brain, 3316

Cage, of cardboard, and picture, 2465

Calaphas, his trial of Jesus, 4423

Calceolate, picture, 2500

Call, story of, and picture, 357

Cairo, capital of Egypt, 4250

pictures, 1253, 4257

Caisson, in bridge building, picture, 1827

Cakes, how to make, 3285

Calabria, province of Italy, 3012

Calah, discoveries, 1073, 1977, picture,  
4975

Calais, captured by Edward III, 748

lost by England, 802, 1232, 2198, 2701

how Philippa saved its citizens, 1230

tunnel to Dover proposed, 2380

statue of citizens, picture, 4169

Calceolaria, how to treat, 1188, 1818

Calcium carbonate, a common salt, 1793

Calcium sulphate, how it is formed, 1800

Calcutta, largest city in India, 1548

English factory set up, 1696

the Black Hole of Calcutta, 1700

Jain temple, picture, 2231

Caldecott, Randolph, his pictures, 2613

Calderon, Don Serafin, poet, 3108

Calderwell, William, see Poetry Index

Caleb, went to view Promised Land, 1025

Caledonian Canal, in Scotland, 184, 188

Calendar, made by the Romans, 2670

California, gold discovered, 2024

its climate, 2064

called the Golden State, 2070

how to telegraph there, 4313

Californian orange-grove, picture, 867

Caligula, Gaius Caesar, Roman emperor, 525

his cruelty, 4946, portrait, 525

Calisto, was turned into a bear, 3314

Callao, port of Lima, 4508, 4578

Callier Pitt, chest of, legend, 4277

Calling crab, 2586

Callar, union of, 3504

Calomelmer, what it is, 4474, picture, 4173

Calvary, Calvary, and after, 3533

return from Calvary, picture, 5093

Calvin, John, his teaching, 3460, 5218

at Council of Geneva, picture, 5231

Calyx, of a flower, 976

Camberwell beauty, butterfly, 2002,

picture in colour, face 2983

Cambridge, what the name means, 3101

Cambysses, King of Persia, his reign, 5058

Camel, travels in the deserts, 131

its life-story, 138, 2328

derivation of word, 3280

pictures, 32, 135, 1545, 3879

Camellia, how it got its name, 3177

Camelopard, name for the giraffe, 3290

Camera, how it takes a picture, 1850

how to photograph without, 2659

what the word means, 2773

how to use a Brownie, and pictures, 4243

a penny camera, and pictures, 4347

Camillus, Marcus Furius, 400, 3554

Camomile: see Chromomile

Campania, province of Italy, 3012

Campanula, how to treat, 1810, 2042

what the word means, 3177

Campbell, Sir Golla, relieved Lucknow, 1702

Campbell, John, vice-admiral, 4010

Campbell, Thomas, poet, 2633, 3738

poems, see Poetry Index

portrait, 3737

Campbor, how it keeps moths away, 1121

Campion, his family, 4111

Campion Edmund, died for his faith, 5067

Canaan, conquest by Israelites, 1094, 1733

Wars with Mesopotamia, 1974

Canada, its size, 70, 1230

war between England and France, 1008,

1112, 1247

its colonisation, 1112, 1216

became a British colony, 1114

the Empire's wonderland, 1230

towns and physical features, 1240

parliament, 1242

products, 1244

story of Canada in the past, 1246

map, 1230

pictures, 1241, 1213, 1215

flag, picture in colour, 1613

Canadian Pacific Railway, 1361, 1835

Canadian porcupine, with picture, 721, 723

Canals, their use in carrying goods, 70

of France, 2392

can be seen in Mars, 2427

of Holland, 3456

Canaris, Constantine, Greek lawyer, 3210

Canary, 2058, 2328, picture, 2050

Canary Islands, home of the canary, 2058

Canary-seed, how to grow, 2563

Cancale, oyster farm, picture, 3773

Candidate, history of the word, 2773

Candle, what happens when it burns, 794

how to make a candle-shade, 2400

fired through door, with picture, 3466

why blowing puts it out, 3691

how a candle is made, pictures, 2403

Canines, the corner teeth, 2098

Cannae, battle of, 5264

Cannas, when to plant out, 3400

Cannibal, word formed from Carib, 1877

Canning, Sir Samuel, engineer, 2476

Cannon, how to make a toy cannon, and  
picture, 4245

Cannon-ball, and immovable post, 2333

falling of, 5165

Canoes, used in Central Asia, picture, 3937

Canonic, its meaning, 935

Canopus, star, its size, 4438

Canova, Antonio, sculptor, 4162, 4956

portrait, 4945, his tomb, picture, 5008

Cast, how the word got its meaning, 1074

Cantabrian Mountains, 3354

Canterbury, New Zealand, 1458

Canterbury bell, 563, 3288, 4112

Canterbury Cathedral, 2150

Canterbury Tales, 633

Cantilever bridge, how it is built, with pic-  
tures, 1826, 1827

Canton, port of China, 4046

lady of Canton, picture, 1039

Canton, John, invented electrical instru-  
ments, 2118, portrait, 2113

Canute, king of England, 516, 570, 2701

emperor of the north, 3594

Cape Colony, became British, 146

its history, 1768

its observatory, 2612

flag, picture in colour, 1644

Cape jumping hare, 722, picture, 723

Cape of Good Hope, 39, 141

Cape petrel, 1827

Cape pigeon, 1626

Cape Town, 1768, picture, 1767

Capercaille, a kind of grouse, 1518

Capet, Hugh, count of Paris, 2198

Capillaries, in the blood, 1579, 1584

pictures, 1581, 1636

Capillarity, what it is, 4824

Capitol, fortress of the Romans, 500

the climb up the Capitol hill, story, 3551

held out against Gauls, 5202

picture, 5250

Capitol, The in Washington, 2066

Capitoline Hill, in Rome, 5260

Capping verses, game, 5113

Capybara, animal, and picture, 721, 719

Caracalla, Roman baths, picture, 5258

Caracara, hawk, 1946, picture, 1847

Caracas, town, 1580, picture, 4574

Caractacus, British chief, 350, picture, 351

Carbo-hydrates, what they are, 1872, 2315

their work in our bodies, 2693

Carbolic acid, 1873, 2507

Carbolic powder, for cleaning teeth, 2100

Carbon, found in plants, 248

why it is important, 363

an element, 795, 1387

in comets, 2499

how it is supplied to the body, 2695

in stars, 2719

can be made volatile, 3093

Carbon compounds, chemistry of, 1809

Carbonate, a salt, 1798

Carbonate of lime, insoluble in water, 522

Carbonic acid gas, what we breathe out,  
248, 1787, 1388, 1793

makes food for plants, 240, 363, 2831

3310, 1442

its taste, 1797

how it is carried to the lungs, 1801

how it mixes with the air, 3070

can be made solid, 1050

Caracassonne, town of France, 2396

Card, how to identify, trick, 4248

horseshoe card problem, 1607, 1778

games with cards, see Games

Cardboard dolls, how to make, and pic-  
tures, 113

Cardiff, what the name means, 1401

Cardinal, Red, bird, picture, 2653

Carey, Lady E, see Poetry Index

Carey, Henry, wrote Sally in our Alley, 3711

poems, see Poetry Index

portrait, 3737

Carey, Phoebe, see Poetry Index

Carey, Wm, his life, and picture, 3481, 3482

Caribbean Sea, 1877, 1107

Caribs, people of the West Indies, 1877

Carina, plant, and picture, 1287

Carina thistle, 4616, picture, 5189

Carlota, empress of Mexico, 4492

Carlyle, Thomas, on the oak, 2888

his life and work, 4848

friendship with Emerson, 5086

life of Schiller, 5222

pictures, 4840, 1841, 4850

Carmarthen, iron and coal mining, 295

Carmel, Mount, picture, 1884

Carmine, colour used in painting, 1811

Carnac, stone monuments, 2193

Carnevario, stone quarries, 264

Carnate, district in the Deccan, 1546

nawab of, 1700

Carnation, its cultivation, 978, 5209

how to layer, and picture, 1071

its family, 1816, 1111

how it got its name, 3177

picture, 5274

Carnivorous animals, 287, 2099

Carnot, Lazare, 4350, portrait, 1053

Carolina, named after Charles II, 2016

Caroline, queen of George II, 1257

Carolina, queen of George IV, turned  
from Westminster, and picture, 4042

Carols, what they are, 2175

Carp, lives after being frozen, 2675

life-story, 2681, pictures, 32, 2679

Carpaccio, Vittore, artist, 4168

Carpathian Mountains, 2860

Carpels, of a flower, 4110

Carpenter, Edouard, his picture, 4050

Chickweed, 3828; picture, 2101  
 Choir, 1715; picture, 1291  
 Choirboys, their cause, 2075  
 Child Charity, story, with picture, 1015, 1044  
 Child Roland, story, and picture, 5081  
 Childeric, captured Paris, 2318  
 Children, how the children saved the town, story, 018  
 why they require salts, 2608  
 their food, 2700  
 why they are easily hurt, 4827  
 why some things harm children, 4827  
 their education, 5281, 5285  
 children of many lands, picture in colour, face 1  
 children's faces from a sculpture, picture, frontispiece to volume I  
 a child shall lead them, picture, 2620  
 child grazing at sunlight, picture, 3035  
 playing with globe, picture, 5281  
 Children Act, what it is, 3402  
 Children's Encyclopedia, why it was made, 1  
 the plan of the book, 2  
 cover, with pictures, 700  
 why it is easier than a lesson book, 841  
 how it is made, pictures, 877  
 Chile, added to Spain's dominions, 1358  
 its position, 1500, 4573  
 its peace with Argentina, 1573  
 flag, picture in colour, 1643  
 Chilian sea-eagle, picture, 1810  
 Chilion, a son of Naomi, 1262  
 Chillon Castle, 3125; picture, 2958  
 Chiloactyle, picture in colour, face 2537  
 Chiltern Hills, 181, 187  
 Chimera, a fish, 2140, picture 2117  
 Chimes, The, the story of the book, and pictures, 2285  
 Chimmey, helps to keep a room fresh, 1798  
 Chimpazee, 680, 3136; picture, 581  
 China and Chinese, no milk used in China, 368  
 astronomy is studied, 1655  
 possessions, 1870, 3932  
 advanced on Central Asia, 3934  
 people, 3971, 4035, 4046  
 physical features, 1030  
 hatred of new ideas, 4030  
 history, 1038  
 the Great Wall, 4038  
 the opening up of China, 1042  
 how to reach China, 1044  
 towns and industries, 1044  
 settled in Japan, 4148  
 war with Japan, 4152  
 PICTURES OF CHINA  
 flag, in colour, 1642  
 Great Wall, 1035  
 temple, 1035  
 empress, Tze hsi, in colour, face 4035  
 maps, 1037, 4140  
 girls doing embroidery, 1030  
 woman with tiny feet, 4039  
 boys' choir, 4030  
 tea-house in Shanghai, 1041  
 festival of the Dragon boat, 4041  
 dinner party, 4041  
 road leading to emperors' tombs, 4045  
 China, porcelain, where made, 207, 2394  
 how to mend it, 4240  
 how it is made, and pictures, 4177, 4470  
 China aster, picture, 5280  
 China tea, 3310  
 Chinchilla, 722, 2730; pictures, 723  
 Chinese lanterns, winter cherry, 076  
 Chinese pink, 5270  
 Chinese railways puzzle, 1823, 1927  
 Chios, Island of, 3413  
 Chisel, when to use it, and picture, 110  
 Chloride of mercury, how to make, 1688  
 Chlorine, a gas, 1388, 1687, 5211  
 in hydrochloric acid, 1797  
 Chloris, spirit of the flowers, 403  
 Chloroform, how it acts, 1005, 3230  
 made from marsh-gas, 1870  
 how its use was discovered, 4201  
 Chlorophyll, in plants, 2881, 4118  
 Chocolate, how it is made, and pictures, 2237  
 its value as food, 3317  
 how to make chocolate creams, 3512  
 Choking, its cause and remedy, 1635  
 Chopin, Frederick, a story about him, 1713  
 story of his life, 3250, portrait, 3213  
 Choregos, who they were, 5001

Chosroes II., Persian king, 3876, 3879  
 Christ, see Jesus Christ  
 Christ Church, Newgate Street, London, picture of spire, 1103  
 Christchurch, New Zealand, 1174, 1178  
 Christian, how the name arose, 1603  
 Christian IV., king of Denmark, 2528, 1590  
 statue in Copenhagen, 3393  
 tomb at Roskilde, 1800  
 Christian Brotherhood, 15  
 Christian names, their meaning, 3077  
 Christiania, capital of Norway, 3590, 3602  
 picture, 3595  
 Christiania Fjord, in Norway, 3602  
 Christianity, persecution by Roman emperors, 526, 527, 530, 4910, 4916, 5211  
 in Britain, 352, 2329  
 brought to England by St Augustine, and picture, 511, 512  
 flourished in Ireland, 514  
 honoured by Constantine, 530  
 in the Roman Empire, 2155  
 its spread, 2522, 3874, 4751  
 how the Eastern and Western Churches arose, 3150  
 disputes among Christians, 3150  
 Goths became Christians, 3351  
 adopted by Denmark, 3591  
 Finland converted, 3630  
 the birth of Christianity, 1683  
 preached in Japan, 4150  
 American natives taught, 1184  
 the winning of the world, 5231  
 Christiansand, port of Norway, 3500  
 Christmas, a tale of Christmas Eve, and picture, 2168  
 true story of Father Christmas, 2172  
 poetry, and pictures in colour, 2175  
 Christmas is ginkhana, 2252  
 Christmas carols, 2253  
 Christmas cards, how to use, 2877  
 Christmas Carol, story by Dickens, and pictures in colour, 2184  
 Christmas hymn, 1920  
 Christmas presents, how to choose, 1852  
 Christmas rose, 4707, 5270; picture, 1708  
 Christmas-tree, for birds and picture, 2251  
 Christopher, St., 988; picture, 980  
 Chromid, a fish, 2684  
 Chrysanthemum, a story of it, 1601  
 meaning of the name, 3177  
 how to make of paper, 1140  
 pictures, 1816, 3730, in colour  
 Chub, a fish, 2681; picture, 2679  
 Chu-fu, king of Egypt, 1785, 5001  
 Chulchurst, Elizabeth and Mary, legend, 4277  
 Church, early leaders of the Church, 2155  
 names arising from church, 2977  
 Cibber, Colley, see Poetry Index  
 Cicada, locust, 3140; picture, 3138  
 Cicero, orator, 407, 5265; pictures, 105  
 Cid, The, fought against the Moors, 3358  
 Cider, made from apples, 005  
 Cilia, what they are, 1637  
 Cimabue, Giovanni, his life, 2780  
 fought Giotto, 4586; portrait, 2770  
 Cimbr, defeated by Romans, 5265  
 Cinnamon, his story, 5201  
 Cinderella, story, and pictures, 490  
 written by Straparola, 1108  
 Cinematograph, what it is, 506  
 Cineraria seed, how to sow, 3514  
 Cingalese, see Singhalese  
 Cinquefoil plant, its family, 4110  
 Cipher, secret writing, 324, 3515  
 Circe, a witch, 542  
 Circle, degrees of a circle, 218  
 making circles and filling them in, with pictures, 1714  
 Circus Maximus, at Rome, 5281  
 Citric acid, found in fruits, 1790, 4710  
 Civet, valued for its scent, 280; picture, 285  
 Civil War, in England, 891, 1887, 1888  
 Clammy bartisia, what it is like, 5103  
 Clamp, a store for vegetables, 4353  
 Clapperton, Hugh, 141; portrait, 145  
 Clare, John, see Poetry Index  
 Claremont, the real fairy of Claremont, story and picture, 2733  
 Clarendon, Edward Hyde, Lord, see Hyde  
 Clark, Leslie, portrait, 3080  
 Claudius, emperor of Rome, became insane, 525; picture, 525  
 Clavichord, musical instrument, 1502  
 Clay, how it is made, 170  
 forms part of earth's crust, 2893  
 how it is made into bricks, pictures, 3038

Clay cylinder, Assyrian picture, 1103  
 Clayton, Dr., coal gas experimenter, 1103  
 Cleaning, hot water is cleaner, best way to clean things, 4156  
 Cleanliness, why it is necessary, 4156  
 Clean, what it is, 1346, 1510  
 Clematis, what the name means, different kinds, 5270  
 pictures, 5269, 5270  
 wild clematis, 4191  
 Clemens, S. see Twain, Mark  
 Clement of Rome, 2330  
 Clement VII., pope, picture, 1917  
 Cleobis and Biton, story of, 1301, 2  
 Cleopatra, loved by Antony, 407  
 the first of the Ptolemies, 4702  
 defeated by Romans, 3003  
 Cleopatra's Needle, its history, 21  
 set up by Thothmes III, 4786  
 pictures, 23, 5099  
 Clergy, growth of influence, 2155  
 Clerk, Clerk's tale, in The Canterbury Tales, 633  
 brave clerk at Delhi, 1913  
 what a clerk did for the world, story, 1610  
 Cleveland, Grover, American president, 2091; picture, 2093  
 Cleverness, and size of brain, 4597  
 Cliden blue butterfly, picture in colour, face 2983  
 Clifton Bridge, 1826; picture, 1822  
 Climate, the two classes, 1880, 1323  
 Climbing perch, with picture, 2682, 21  
 Clithrenes, his daughter's suitors, 2301  
 Clive, Robert, in India, 1008, 1700  
 Clock, the story of the clock, 1535  
 how to tell the time, and picture, 15  
 cuckoo clocks, 2754  
 Ghibli's clock, 3549  
 how to make case, and picture, 4775  
 how it works, pictures, 1537  
 Clodion, Claude Michel, sculptor, 4162  
 Cloys, where the pattern came from, 239  
 Cloister and the Hearth, The, story of the book, and pictures, 1017  
 Clothes-basket, a game, 2252  
 Clothes-moth, its life-story, 2092  
 Clothes-peg, how the gypsy makes them and pictures, 1198  
 fighting clothes pegs, how to make, and picture, 702  
 Clothing, its warmth, 691, 3183, 4338  
 why it should be loose, 2071  
 how to make old clothes new, 3723  
 Cloud-berry, what it is like, 4810  
 Clouds, made of water, 178, 445  
 do not make thunder, 1575  
 why they have silver linings, 1774  
 shadows on hills, 1862  
 how they stop sunlight, 3387  
 what it is like above the clouds, 1891  
 different forms of, and pictures, 3692  
 why they fall as rain, 4337  
 part of the earth, 4517  
 when the sky is clear, 1828  
 why they do not fall, 4908  
 their making and unmaking, 5022  
 Clough, Hugh, see Poetry Index  
 Clove hitch, and picture, 3283  
 Clove-pink, the carnation, 5270  
 Clover, plant, different kinds, 4292  
 pictures, 2706, 4108, 4289  
 Clovis, founded France, 2194  
 was Childeric's son, 2318  
 pictures, 2195  
 Clumps, a game, 230  
 Clustered bell-flower, 1715; picture, 1711  
 Clyde, river, 68, 183; 267  
 Coaches, their use in olden days, 05  
 couch in the floods, picture, 347  
 Coaita, a monkey, 584; picture, 581  
 Coal, trees turned into coal, 30, 3133, 3542  
 turns turned into coal, 130  
 where it is plentiful, 190  
 in Northumberland and Durham, 267  
 why it burns, 484, 2506  
 contains stored sunlight, 1267  
 made by carbon, 1387  
 how gases get into it, 2506  
 its history, 2571  
 how the forests were buried, 2708  
 to carry coals to Newcastle, 3505  
 to haul over the coals, 3506  
 why it is good for fuel, 3757  
 in West Turkistan, 3932  
 how it was found, 1440  
 its price, 4746

Cooper, J. F., life, 5084, portrait, 5083  
his book, *Last of the Mohicans*, 5143  
Coot, a bird, 1951, picture, 1950  
Copenhagen, meaning of name, 5395  
capital of Denmark, 5398  
picture, 5395  
Copenhagen, battle of, 5398, 1360  
Copernicus, crater in the moon, 2221  
Coppernious, Nicholas, his life, 1858  
discovered movement of planets, 1912, 1913, portrait, 1853  
Cophetua, king, and beggar maid, 811  
picture, 815  
Copper, an element, 705  
used to carry electricity, 1392  
Rio Tinto mines, 1302  
Copper Island, Behring Sea, picture, 2731  
Copper pyrites, where found, 1246  
Copolites, what they are, 5152  
Copts, Egyptian Christians, 1256  
Copying, simple apparatus, 2255  
Coral, how it is made, 2336  
the various kinds, pictures, 2331, in colour 2335  
how coral grows, picture, 2311  
Coral islands, 147, 1876, picture, 917  
Coral snake, with picture, 1378, 1379  
Corbould, E., his picture of Jesus, 2010  
Corday, Charlotte, killed Marat, 2271, 1062  
arral, picture, 1059  
Cordilleras, Andes mountains, 1577  
Cordova, town in Spain, 3351  
its cathedral, 3363  
Cordova, treaty of, 1388  
Coralli, Marie, novelist, 3710  
Corinth, taken by the Romans, 5130  
Corinth Canal, with picture, 1081, 5011  
Corinth, Isthmus of, 5121, 5130  
Coriolanus, his story, 5201  
Coriscrown, game, and pictures, 5113  
Cork, in Ireland, 188, 189, 1401  
Cork, keeps water out, 605  
specific gravity, 3311, 605  
how to make cork picture frame, and picture 2463  
Cormon, Ferdinand, his picture, 5127  
Cormorant, bird, catches fish, 1522  
how the shagbills rob it, 1626  
can be tamed, 1951  
pictures, 1522, 1717  
Corn in Manitoba, 1212  
in France, 2301  
soil of corn lands, 3311  
harvest in Canada, picture, 3311  
how grown and harvested, pictures, 4091  
Corn buttercup, 1118, picture, 1110  
Corn cockle, plant, 1121, picture, 1121  
Cornerake, a bird, 1958  
Corna, mother of the Gracchi, 402, 1176  
Cornelius, baptism by Peter, 1515  
Cornell, Ezra, laid a cable, 2174  
Cornflower, as a food, 2926  
how to treat plants, 1153  
why Germans wear cornflowers, 1691  
how it got its name, 3177  
what it is like, 1121, picture, 1118, 1121  
Corn-Laws, abolished, 2386  
Corn marigold, 4124, pictures, 1117, 1121  
Corns, what they are, 3073  
Cornwall, tin mines, 263, 115  
derivation of name, 1161  
Cornwall, Barry, his real name, 318, 4520  
see *see Poetry Index*  
Cornwallis and generals, picture, 2021  
Corolla, of a flower, 4110  
Corona Borealis, group of stars, 2810  
Coronium, in sun's corona, 2854, 2621  
Corymbium, sea animal, 2537  
Cortez, Antonio, picture, 773  
his picture, *The Birth of Jesus*, 731  
portrait, 779  
Cortez (pirates), 1290  
Corwall Point Lighthouse, picture, 1457  
Cortez, island, 5398, 5391  
Cortes, son of Cortez, 191, 4142  
Cortez, birth of, 613, 3102  
Cortez, what he did, 1021  
Cortez, how they were, 1021  
in bed in Cortez's room, 1021  
picture, 1021  
Cost and value, 1570  
Costa Rica, 1501, 1502, 1503  
Costa Rica, 1501, 1502, 1503  
Costa Rica, 1501, 1502, 1503  
Costa Rica, 1501, 1502, 1503  
Costa Rica, 1501, 1502, 1503

Cotswold Hills, in England, 194, 187  
Cotton, English trade, 202  
how weather affects it, 2328  
how chalcid fly saves plant, 2358  
growth and manufacture, with pictures, 1811, 1812  
amount produced by United States, 1812  
through microscope, picture, 2325  
Cotton-gin, invented by Whitney, 1811  
Cotton grass, with picture, 5037, 5038  
Cotton-thistle, what it is like, 5271  
Cottonian manuscripts, 1102  
Couch grass, picture, 1333  
Coughing, a kind of expiration, 1038  
Countess, the heroic countess, story, 3883  
Counting, why people count in tens, and picture, 1985  
child's counting rhyme, pictures, 210

## COUNTRIES

CHILD'S BOOK OF ALL COUNTRIES  
The following are actual headings of the chapters in this section, the separate entries appear below, and in their proper places in the index  
the land we live in, 63  
the work of our island home, 183  
the workers of our land, 201  
England in the long ago, 315  
the founding of the nation, 509  
the beginning of our freedom, 500  
fighting for the crown, 745  
the times of the Tudors, 707  
the end of the Stuarts, 891  
the empire of a long struggle, 1007  
the empire of eternal sun, 1111  
Canada, the Empire's wonderland, 1210  
Australia, the great south land, 1365  
New Zealand, the beautiful dominion, 1453  
India, the Pearl of the East, 1545  
India, how it became an empire, 1695  
the British Empire in Africa, 1705  
outposts of the British Empire, 1875  
the United States, 2015  
the United States of to day, 2003  
the beginnings of France, 2107  
France in the revolution, 2267  
France as it is to day, 2389  
the beginnings of Germany, 2521  
the making of Germany, 2635  
Germany as it is to day, 2717  
Austria-Hungary, 2851  
Switzerland of the snows, 2959  
Italy, the land of romance, 3011  
the Balkan Peninsula, 3110  
Turkey and the Balkans, 3219  
Spain and Portugal, 3353  
Holland and Belgium, 3465  
Norway, Sweden, and Denmark, 3501  
the making of Russia, 3621  
Russia as it is to day, 3745  
Persia and Asiatic Turkey, 3873  
the heart of Asia, 3931  
the Chinese Empire, 4035  
Japan and Korea, 4117  
Africa outside the British Empire, 4251  
Mexico and Central America, 4381  
the history of South America, 4497  
South America of to day, 4571  
the world around the Pole, 4719  
Babylonia and Assyria, 4791  
the rise and fall of Persia, 4957  
the glory that was Greece, 5121  
the grandeur that was Rome, 5259  
Country, why healthier than town, 2850  
country people's sight, 1002  
how its area is measured, 5218  
country scenes, pictures, 1888  
Complot, what it is, 105  
Compt, J., his picture, Mark Antony, 2017  
Comin, Jean, sculptor, 1102  
Covenant, another word for testament, 11  
Covenanters' service, picture, 1761  
Covenant Garden, London, 601  
Coventry, its industry, 265  
to send a person to Coventry, 3505  
Cow, its life story, 308, 2328  
how it makes its milk, 1573  
the white cow, legend, 2744  
derivation of word, 1573  
Cow-catcher, of an engine, 367  
Cow-pars, name for hogweed, 4162  
Cow-wheat, lives on water, 2310  
Cowberry, see Water huckleberry  
Cowbird, 1992

Cowboys, 1244  
Cowper, William, wrote hymns, 2  
his life, 3905  
poems - see Poetry Index  
pictures, 1999, 3905, 3907  
Cowries, shells, picture, 1117  
Cowpox, meaning of word, 3177  
what it is like, 4290, 1490  
picture, 1281  
Coyote, animal, 720, picture, 710  
Crab, greediness, 1411  
how it leaves its shell, 2329  
lives in sponges, 2340  
life story, 2383  
various kinds, 2584, 2586  
crab and her mother, fable, 3062  
pictures, 32, 1410, 2582  
Crab-apple tree, 1115, 1495, picture, 1115  
Cracow, old capital of Poland, 2854  
Crack, Mrs., life, 2599; portrait, 2599  
Crack, family of snakes, 1378  
Cramp, used in picture framing, 1021  
Cramp, its causes, 3072  
Crabtree, 5038, 4112  
Crane, wolf and crane, fable, 915  
how it differs from the heron, 1951  
various kinds, with pictures, 1957  
length of life, 2328  
and wise crab, fable, and picture, 42  
Cramer, Thomas, arranged Book  
Common Prayer, 801  
burnt to death, 802  
his death, with picture, 5080, 5070  
made changes in religion, 5238  
Crassus, a wealthy Roman, 100, 5205  
Crater, what it is, 8, 3229  
Crayfish, 2586, picture, 2585  
Cream, best form of fat for children, 20  
why a good food, 2793  
why it forms on milk, 1338  
separating from milk, picture, 1151  
Creation, the Bible story, 355  
described on Assyrian tablets, 1981  
Crete - see Cressy  
Creeping buttercup, 1920  
Creeping Jenny, plant, 4112  
Creeping soft grass, picture, 1338  
Creeping wheat, picture, 1333  
Cremona, manufacture of violins, 1013  
Cretaceous, in South America, 4505  
Creon, king of Thebes, 13, 617  
Cresset, poisons microbes, 1088  
Cress, grown without soil, 2504  
which to sow, 2070, 3288  
pictures, 2504, 2561  
Cressy, battle of, 718, 2701  
Crested dogtail grass, with picture, 1315  
Crested wren, egg of, picture, 1714  
Cretaceous layer of the earth, 2893  
Crete, taken by the Venetians, 1151  
early civilisation, 1199  
palace discovered, 5122  
settlement formed by Spartans, 5121  
flag, picture in colour, 1014  
Cresses, in glaciers, 2000  
Crows, railway workshops, 268  
Crown stitch, with picture, 4000, 1007  
Cricket, insect, little boy and story, 2104  
different kinds, 3111  
Cricket, how to play it, and pictures, 3278  
Cricket bat, how to mend, 1210  
Cricket on the Hearth, story of the book, and picture, 2288  
Crimea, annexed to Russia, 3671  
Crimean war, Florence Nightingale's work, 327  
the campaign, 1012, 3632  
Crimean war, 3632  
Crispin, St., patron of shoemakers, 981  
Cristoforo, D., made first piano, 1016  
Crochet, how to crochet, and pictures, 1318  
how to make crochet purs, 1029  
how to make a shawl, and pictures, 5107  
Crocodiles, its use, 12  
life story, 1221, 1227, 2328  
pictures, 32, 1022, in colour  
Crocodur, what to do with its teeth, 417  
how to treat crocodur, 1130  
its family, 5273  
Crosus, king of Lydia, the question he asked Solon, story, 301  
Crosus visited his court, 2010  
defeated by Cyrus, 5083  
Crofters, in Scotland, 195  
Croft, Ernest, his picture of Napoleon, 1004  
Croket, Thomas, wrote fairy tale, 1471

- David (pictures) attacked Goliath, 1179  
 playing before Saul, 1481  
 with Saul at the mouth of the cave, 1181  
 painting by Frederick Shilds, 1181  
 statue by Michael Angelo, 1182  
 David, St., the Luries of, story, 2608  
 David I., of Scotland, reign, and picture, 3080  
 David II., king of Scotland, 3084  
 David Copperfield, book by Dickens, 2311  
 story of the book, and picture, 2827  
 Davis, Jefferson, president of the Confederate States of America, 2024  
 Davis, John, explorer, 4722  
 Davy, Sir Humphry, thought gas could not be used, 252  
 made electric light, 083  
 discovered laughing gas, 1216  
 invented the safety-lamp, 1871, 4319  
 helped Faraday, 2119, 4311  
 experimenting with light, picture, 080  
 portrait, 4313  
 Dawlish, parson and clerk, legend, 1083  
 Dawson City, in Canada, 1211  
 Day, where it begins, 080  
 getting longer, 1078, 2281  
 how the days got their names, 2670  
 story of the days, 4130  
 meaning of day and night, picture, 118  
 Day-fly - see May-fly  
 De Quincey, Thomas, his life, 4084  
 pictures, 1675, 1085  
 De Ruiter, M. de, fought against the English, 3103  
 portrait in Ryks Museum, 3461  
 Dead-leaf butterfly, 3111  
 Dead-nettle, what it is like, 1188  
 pictures, 3831  
 Dead Sea, one cannot sink in it, 1003  
 in Palestine, 3874  
 Deadly nightshade, what it is like, 1715  
 pictures, 3805, 4190  
 Deaf and dumb language, with picture, 5291  
 Deafness, effect of loud noises, 2420  
 Deal, a fishing town, 100  
 Death, the men who went to kill death, Canterbury Tale, 618  
 disease its cause, 2622  
 why there is death, 2023  
 the man who carried death, story, 3789  
 should not be feared, 1745  
 Death adder, lives in Australia, 1178  
 Death-watch insect, 3142, picture, 3117  
 Death's-head moth, enters bee hives, 2821, 2093, picture in colour, face 3111  
 Deborah, the prophetess, her story, 243  
 how she saved the Israelites, 1005  
 Deborah, Deborah's nurse, 244  
 Deccan, the southern half of India, 1516  
 its progress, 1096  
 December, what the name means, 2071  
 how it got its name, 4521  
 Decimal system, what it is, 1085  
 Decimetre, a tenth part of a metre, 1071  
 Decius Mus, Fabius, how he gave his life for Rome, and picture, 2032  
 Declaration of Independence, 2022  
 signed in Philadelphia, 2006  
 signing the Declaration, picture, 2021  
 Decomposition, its meaning, 1211, 1605  
 Decoration Day, what it means, 2021  
 Deeds, why we do things, 3131  
 Deer, how the lion hunts them, 277  
 how the antelope hunts them, 280  
 the various kinds, 71  
 how they are attacked by eagles, 1840  
 pictures, 12, 373  
 Deigo, Daniel, his book, Robinson Crusoe, with pictures, 1271, 1725  
 his life, 1726; portrait, 1725  
 in the pillory, picture, 1725  
 Deger, E., his picture of Jesus' last entry into Jerusalem, 3198  
 Del Cano, Sebastian, the first man to sail round the world, and statue, 10  
 Del Fiombo, life, 4011, portrait, 1915  
 Delft, old town of Holland, 173  
 Delhi, famous old city of India, 1718  
 where the Turks reigned, 1698  
 occupied by the Sepoys, 1913  
 Delilah, her betrayal of Samson, 1261  
 Delia Garcia, Jacopo, a sculptor, 1161  
 Della Robbia, Andrea, an artist, 2709  
 Della Robbia, Giovanni, an artist, 2709  
 Della Robbia, Luca, his picture of five angels, 2175  
 Della Robbia, Luca, his life, 2790  
 modelled figures, 4101, portrait, 2770  
 Delphi, oracle, 272, 399  
 Delphinium, a name for larkspur, 4419  
 Delta, how it is made, 4826  
 Demavend, Mount, in Persia, 3881  
 Demeter, a goddess, 5126  
 Democritus, his search for truth, 3784  
 and Hippocrates, picture, 3785  
 Demosthenes, his life, 1304, 5130  
 Dendera, temple - see Hathor's temple  
 Denmark, how it got its flag, 1840  
 lost Schleswig and Holstein, 2839  
 history and geography, 3501  
 royal Council abolished, 3598  
 became independent, 3508  
 royal family's influence on Europe, 3598  
 how to reach it from England, 3598  
 flag, picture in colour, 1641  
 map, 3601  
 Denmark Monument, its pictures, 3598  
 Denny, William, built steamboats, 2472  
 Density, what it is, and pictures, 002, 097  
 Denture, part of a tooth, 2090  
 Derby, silk manufacture, 266  
 Derby, Charlotte, lady, how she defended  
 Latham House, and picture, 1719, 4716  
 portrait, 1718  
 Derbyshire, the Peak district, 184  
 Dermis, a layer of the skin, 1010  
 Derwentwater, lake, picture, 5017  
 Descartes, René, his wooden daughter, 3210  
 what he did for science, 4020  
 portrait, 4025  
 Desert, crossed by camels, 138  
 forests and deserts, 3131  
 how it is made, 3132  
 of a red colour, 3133  
 desert picture, 480  
 a desert made fertile, picture, 2071  
 designs, pictures, 5016  
 Designs, simple ways of making, 3919  
 designs made from coins, picture, 3919  
 Desman, shrew, 720, picture, 725  
 Desmodus, a bat that attacks cattle, 786  
 Dessert, the world on a dinner-table, story, 5206  
 Determinants, in a plant, 4442  
 Devil-erab, 2581  
 Devil-fish, the cuttle fish, 2452  
 Devil's coach-horse, the rove beetle, 3263  
 Devonport, builds warships, 267, 267  
 Dewar, Sir James, his work with liquid air, 1211, 4050  
 Dewberry, how it grows, 4016  
 Dewdrop, what it is - 290  
 on spider's web, picture, 201  
 Diagonal, what it is - 3895  
 Diameter, its meaning, 483, 2081  
 Diamond, made of carbon, 103, 795, 1387  
 why people wear diamonds, 1570  
 why diamonds are costly, 1570, 4716  
 history of the word, 2773  
 why it cuts glass, 3238  
 specific gravity, 3810  
 the rich man's diamond, story, and picture in colour, 4934  
 how it refracts light, 5177  
 Diana, goddess, slow Orion, legend, 3313  
 was worshipped, 1131  
 Diana in the woods, picture, 1131  
 Dianthus the pink, 1810, 2042  
 Diaphragm, a muscle of the body, 1613  
 how it works, picture, 1637  
 Diatoms, picture, 2340  
 Diaz, Bartholomew, discoverer, 39  
 Diaz, General Porfirio, his work, 4702  
 Didkin, Charles, wrote serious, 3738  
 poems - see Poetry Index  
 portrait, 3737  
 Dicentra, plant, 3272  
 Dickens, Charles, his life, 2312  
 the stories of Dickens, and picture, 2430  
 Barnaby Rudge, 2701  
 The Chimes, 2285  
 A Christmas Carol, 2185  
 The Cricket on the Hearth, 2288  
 David Copperfield, 2827  
 Dombey and Son, 2351  
 Martin Chuzzlewit, 2655  
 Nicholas Nickleby, 2651  
 The Old Curiosity Shop, 2757  
 Oliver Twist, 2351  
 poems - see Poetry Index  
 portrait, 2307  
 Dickens, and characters from his picture, 2313  
 Dicky show a light, game, 898, 3725  
 Dictionary, its use, 853  
 Diderot, leader in French Revolution, opinion on speaking and singing, 4  
 portrait, 1033  
 Dido, queen of Carthage, 544  
 Die Wacht am Rhein, the German national song, 2751  
 Diet, see Food  
 Diffusion of gases, what it is, 3000, 4  
 Digestion, how food is digested, 2206, 2  
 how it is affected by the brain, 3108  
 Dimple, angel of the dimples, story, 2  
 what it is, 2687  
 Dinario Alps, their position, 3222  
 Dingan, Zulu king, 1709, 1486  
 Dingan's dog, a great Boer victory, 17  
 Dingo, the wild dog of Australia, 498  
 Dinner, at the Inn, story, with picture, 51  
 Dinner-table, things to make for it, 26  
 Dinoceras monster, picture, 27  
 Dinosaurs, skeleton, with picture, 515  
 Dinosaurs, prehistoric lizards, 29  
 Diocletian, emperor of Rome, persecuted the Christians, 194, 529, 5211  
 portrait, 530  
 Dionysius, ruler of Syracuse, 82  
 Diptheria, disease of the throat, 1030  
 Dis, king of the underworld, 158  
 Disbudding, causes fine blooms, 755  
 Disc, its shape, 1381  
 Disciples - see Jesus and Apostles  
 Discobolus, Greek statue, 1160  
 Discontinuous spectrum, what it is, 2805  
 Discord, what it is, 2020, 1859  
 use in music, 4918  
 Discovery, an exploring vessel, 1724  
 Disease, partly our own fault, 2622  
 creation of new diseases, 2798  
 how we can learn from monkeys, 3137  
 reason of infection, 3972  
 Disraeli, Benjamin, see Beaconsfield  
 Distance, how to judge, 4901, 5200  
 in a picture, 4905  
 Diver, why he has lead on his boots, 3760  
 pearl-divers, picture, 830  
 Diver-petrel, 4626  
 Dives and Lazarus, parable, 3961  
 Diving, how to swim and dive, 3819  
 why people rise to the surface, 4234  
 pictures, 3818  
 Dizziness, why it causes everything to spin round, 2232  
 its cause, 3137  
 Dniester, river in Russia, 3623, 3745  
 Dniester, river in Russia, 3631  
 Dockyards, started 899  
 Doctor, of Burton Port, story, 431  
 the world's great doctors, 4195  
 Dr Syntax, rock, and picture, 1053  
 Dodder, plant, 3830, 4010; picture, 3832  
 Dodge, Mary Hayes, see Poetry Index  
 Dodgson, Charles, see Carroll, Lewis  
 Dodo, bird, 28, 1428, picture, 1125  
 Doe, the female deer, 374  
 Dog, draws sledges in Arctic regions, 131  
 wild dogs, 287  
 the different kinds of dogs, 400  
 dog and the shadow, fab, 612  
 drawing of a dog from square, 975  
 how it knows strangers, 1132  
 dog in manger, fab, with picture, 1205  
 why a dog feels the heat, 1912  
 the dog and the wolf, fab, 1979  
 a simple way to draw a dog, 2034  
 the man who loved dogs, story, 2091  
 length of life, 2328  
 dog and ass, fab, with picture, 2778, 2810  
 how the word is derived, 3289  
 what to go to the dogs means, 3506  
 its brain, 3716  
 dog that knew his master, story, 4001  
 turns round before lying down, 4596  
 dog that came home again, story, with picture, 4799  
 making a kennel for, and picture, 5105  
 brave little dog of the wood, story, with picture, 5100  
 story of Gelert, 5210  
 wild dogs, picture, 285  
 various kinds, pictures, 194, 197, 199  
 way to draw a dog, picture, 2034  
 Dog daisy - see Ox-eye daisy  
 Dog nattle, a name for hemip-nattle, 1122  
 Dog rose, with pictures, 4109, 1185, 1190  
 Dog violet, 4138, picture, 4184

- English language, made up of many others, 1268  
 number of words in it, 2330  
 how it grew, 2558  
 why it has words from other languages, 3239  
 why it has different words for the same thing, 3239  
 Engaged moth, picture, 3413  
 Enid, the story of Geraint and Enid, with picture, 1976  
 Enns, town, 2354  
 Envelope, how to draw and paint, 212  
 picture, 213  
 Ewer Bey, Young Turk leader, 3220  
 Epaminondas, led the Thebans, 1301, 5130  
 Epaphroditus, master of Epictetus, 2911  
 Ephesus, founded by Ionians, 5124  
 Epic poetry, what it is, 11  
 Epictetus, saying of, 1271  
 his teaching, 2911  
 Epidermis, layer of the skin, 1910  
 Epiglotus, closes the windpipe, 1635  
 Epigram, what it is, 5140  
 Equation, what it is, 1669  
 Equator, divides the earth, 182, 1750  
 divides Africa, 1765  
 why it is hot at the Equator, 3034  
 earth's movement at, 5167  
 Equilibrium, different kinds, 3673, 3837  
 shown by tops, picture, 3669  
 Erasmus, Desiderius, his enthusiasm for Greek, 3150  
 what he said of Amsterdam, 3456  
 religious reformer, 5236  
 picture, 5233  
 Erebus, an exploring vessel, 4721, 4710  
 Erebus, Mount, discovered by Ross, 4730  
 picture, 4719  
 Erech, ancient city of Mesopotamia, 1974  
 Ere, who gave his life for his master, 915  
 Erie, lake, of Ontario, 1240, 2622  
 Erne river, of Ireland, 185  
 Erashaddon, king of Assyria, 4980  
 picture, 4981  
 Esau, cheated of his father's blessing, 123  
 how he sold his birthright, 629  
 meets Jacob on his return home, 686  
 Esbjerg, port or Denmark, 3593  
 Escallonia, garden plant, 5272  
 Escorial, built by Philip II., 1860  
 Eskimo dog, 496, picture, 499  
 Eskimos, hunt the musk-ox, 370  
 cat fat, 3239  
 their way of living, 4720  
 Captain Hall's book, 4724  
 pictures, 4719, 4727  
 Esparto grass, 874  
 Essen, where Krupp's factory is, 2752  
 Essences, their smell, 1572  
 Esther, how she became queen, 240  
 how she saved her people, 2517  
 portrait, 241  
 pleading for her people, picture, 2548  
 denounces Haman, picture, 2549  
 Esthoman girl, picture, 3747  
 Eteocles, ruled in Thebes, 434  
 Eternal City, name given to Rome, 3012  
 Ethelbert, king of England, 511  
 became a Christian, 2159  
 Augustine appealing to, picture, 2159  
 Ethelred, king of England, 516  
 Ethyl alcohol is very poisonous, 1872  
 Ether, its effect on the solar system, 2233  
 what it is, 2708, 2366  
 what happens when it moves, 3466  
 its specific gravity, 3316  
 conveys light but not sound, 3977  
 its different waves, 4170, 5173, 5254  
 cannot convey sound, 4581  
 the cause of our seeing, 5039  
 light waves in ether, 5042  
 seat of electrical attractions, 5256  
 Ethers related to alcohol, 1873  
 Eliquate, what the word means, 2773  
 Elina, Mount, a volcano, 3012, 3220  
 Eton, founded by Henry VI., 754  
 Etruscans, settled in Italy, 5259  
 attacked by Greeks and Romans, 5261  
 Ettrick Shepherd, name given to James Hogg, 81  
 Eucalyptus, tree, 1364  
 Euclid of Megara, a great philosopher, 4618  
 portrait, 4619  
 Euclid the mathematician, how he argued, 4618  
 portrait, 1625  
 Eugene, prince of Savoy, 2530  
 Euphrates, river, battles fought on its banks, 1752  
 said to have watered the Garden of Eden, 3871  
 its course, 1971, 1975, 1984  
 Eurasis, name of Europe and Asia, 3823  
 Eureka, its meaning, 5096  
 Europe, spread of Christianity, 2522  
 increase of population, 1907  
 SEE ALSO UNDER SEPARATE COUNTRIES  
 Eurytheus, king of Argolis, 5103  
 Eustace of Boulogne, 1537  
 Eustache, his love for his master, 1914  
 Evaporation, what it is, 2335  
 goes on at all temperatures, 2505  
 Eve, the first woman, 213, 356  
 Evening primrose, 7950  
 Everest, Mount, 1715, picture, 7691  
 Everlasting pea, 1614, 5274, picture, 1611  
 Evolution, Darwin's theory, 5153  
 meaning of word, 5189  
 Ewall, Carl, wrote fairy tales, 1474  
 Ewing, Mrs. see Poetry Index  
 Exciter, what it is, 228  
 Excommunication, what it means, 2526  
 Exercise book, what to do with, 2402  
 Exeter, makes gloves, 265  
 Expiration, what it is, 1637  
 Exploration - see Polar exploration and names of explorers  
 Explosion, its cause, 5240  
 Eyam, attacked by plague, 81  
 Eye, what happens if blood-vessels are stopped, 1132  
 our optical eye, 1218, 3976  
 why the eyes close during sleep, 1272  
 how pictures are printed on the eyes, 1683, 4518  
 why onions make it water, 1980  
 why we blink, 2415  
 the use of two eyes, 2122  
 the effect of a blow on the eye, 2798  
 why we cannot see small things, 2830  
 cones of the eye, 2835, 4103, 4104  
 why we see colours when we shut our eyes, 3035  
 what spots before the eyes are, 3035, 4401  
 how to remove dust, 3399  
 why the pupil varies in size, 3131  
 what eyes are made of, 3977  
 the story of, with pictures, 4217, 4213  
 the parts of the eye, 4293  
 why eyes are different colours, 4294  
 how the iris affects the pupil, 4294  
 how the lens works, 1265  
 the light in our eyes, 4401  
 the retina, 4403  
 rods of the eye, 4403, 4404  
 what the pigment-cells do, 4405  
 how we can preserve our eyes, 4510  
 walking with eyes shut, 1905  
 how it sparkles, 5103  
 PICTURES OF THE EYES  
 how our eyes deceive us, 104  
 how pictures are printed inside, 1683  
 eye of a fish, a bird, a man, 4213  
 section of, perfect eye, 4293  
 in which the cornea is too flat, 4293  
 in which the cornea is too convex, 4293  
 section of the eyeball, interior of the eyeball, portion of the retina, 4401  
 how eyes grow from the brain, 4507  
 SEE ALSO EIGHT  
 Eye-bright, lives on other plants, 3830  
 Eyebrows, their use, 841, 1962  
 Eyed blenny, fish, picture, face 2537  
 Eyed hawk moth, picture in colour, face 2988  
 Eyelids, do not shut out all light, 1266  
 their duties, 4218  
 Eyre, E. J., explorer, 297, picture, 296  
 Eyre, the eagle's nest, 1538  
 F  
 Faber, Frederick, hymn writer, 1713  
 Fable, what a fable is, 425  
 Fabiano, Gentile da, life, 4406, 4918  
 portrait, 4915  
 Fabricius of Acquapendente, discovered the valves of the veins, 1198  
 Face, why it chinkes, 1267  
 why it is crooked in a mirror, 1572  
 why our face shows our character, 1910  
 why our faces keep warm, 2505  
 how to draw people pale, 3236  
 how to draw hundreds of faces, with picture, 5105  
 Fading, why things fade, 1235  
 Faerie Queene, stories from, and picture, 693  
 Fahrenheit, Gabriel, invented the thermometer, 1801  
 Fahrenheit thermometer, 2073, 1671  
 Fainting, what happens, 1132, 2115  
 Fair Maid of Perth, The, the story of a novel, 1402  
 Fairfax, Thomas, lord, besieged Kenilworth Castle, 1165  
 his siege of Lathom House, 4718  
 Fairies, and the hunchback, story, 11  
 the fairy's revenge, story, 1450  
 the fairies of St. David, story, 2868  
 the wise and foolish faeries, fable, picture, 1223  
 Fairy-books, the writers of, 1467  
 Fairy rings, and picture, 4593  
 Fairyfoot, story, with pictures, 1900  
 Fairyland, picture in colour, face 43  
 Faithful John, story, with pictures, 46  
 Falcon, 1830, 1846, pictures, 1843  
 Falconer, E., wrote song Killarney, 774  
 Falconet, Etienne Maurice, sculptor, 11  
 Falkland, Lucius Cary, viscount, became a follower of Charles I., 1688, 1690  
 portrait, 1690  
 Falling bodies, fall at same speed, 290, 35  
 why a falling object turns round, 242  
 how far a stone falls in first second, 34  
 speed increases as they fall, 3432, 3673  
 gravity increases the rate of falling, 381  
 Falling star - see Meteor  
 Fallow deer, 374  
 False cyprus, 5036, picture, 5034  
 False oat, picture, 2890  
 FAMILIAR THINGS  
 CHILD'S BOOK OF FAMILIAR THINGS  
 The following are the actual headings of the chapters in this section, the separate entries appear below, and in their proper places in the index  
 how a lighthouse is built, 53  
 how the tea comes to the table, 58  
 the wonder of the telephone, 59  
 what the penny does in the slot, 62  
 the house upon the sea, 109  
 how the horse's shoe is made, 172  
 the end of the life of a tree, 174  
 how a pin comes out of the earth, 176  
 where the gas-light comes from, 251  
 making a basket out of willow, 253  
 how a balloon sails in the sky, 251  
 how our letters come to us, 377  
 the building of a house, 381  
 the great wonder of a train, 461  
 where the money is made, 595  
 where the fruit comes from, 665  
 how an oyster makes a pearl, 829  
 the wonder of a book, 873  
 how we got the piano, 1015  
 how the fog-signal helps the train, 1021  
 the world's bread-and butter, 1143  
 where the glass comes from, 119,  
 how the gipsy makes the pags, 1198  
 the grass of the field, 1331  
 a walk by the seashore, 1409  
 the story of the clock, 1535  
 the flags of all nations, 1639  
 how the maps are made, 1749  
 the life of a sponge, 1752  
 footpaths in the air, 1825  
 where the nuts come from, 1965  
 a glass of water, 2101  
 a stick of chocolate, 2237  
 the story of the microscope, 2319  
 a boxful of sunlight, 2403  
 making a box of matches, 2404  
 how a candle is made, 2408  
 winter's white diamonds, 2509  
 coal how we dig up sunshine, 2571  
 the story of a fur coat, 2727  
 how we got the bicycle, 2835  
 splendour in the grass, 2895  
 the story of a brick, 7037  
 how buildings are saved from ruin, 3043  
 the story of the umbrella, 3097  
 how a pair of boots is made, 3102  
 a talk about trees, 3183, 3139, 3640  
 how men learned to write, 3571  
 how we send a telegram, 3574  
 how we get our fish, 3765  
 a walk in a country lane, 3883  
 a piece of rope, 3991  
 the life of the earth, 4070  
 a little talk on sculpture, 4159  
 the rule of the road, 4290

Flour, window 11 Clifton's Tower, 2701  
 Florida, grows flowers and fruit, 907  
 is a winter resort, 2034  
 sold by him, 310  
 a peninsula, 4341  
 orange grove, picture, in colour, 507  
 Florida, steamer, run into Papahoe, 3524  
 Flour, colour, experiment, 2548  
 Flour, how flour is made, 1150  
 contains little water, 1159  
 Hm, grain flour, the bit at 2500  
 its value as a food, 2521  
 making flour and bread, pictures, 1150  
 Flowers, etc. in winter, 124  
 how to arrange for the house, 152  
 little stories about flowers, 191 1691  
 how to preserve plants flowering, 507  
 once all said, 319  
 how to keep out flowers, 1071  
 their sleep, 1205  
 everlasting flowers, 1257  
 sleeping with flowers in the room, 1370  
 making impulse pictures with 1622  
 their scent, 1670, 1830  
 why they were made, 2075  
 all tried have flowers, 2077  
 can - e, 2707  
 fertilized by bees, 2828  
 why they vary in colour, 3039  
 how they resist cold, 1094  
 how they got their names, 3177  
 how to preserve real flowers, 3511  
 how a flower is born, 3711  
 buds of flowers, 3911  
 freeze in liquid air, 4051  
 why petals are not green, 4118  
 colouring matter of red flowers, 4118  
 to make paper flowers and pictures, 4118  
 of the hedgehog, 4185  
 what they must have to grow, 4335  
 do not feel pain, 4335  
 of the cornfield, 4417  
 how they are of their colour, 4412  
 of the woodland, 4447  
 why the sun does not fade them, 4448  
 of the health, 1009  
 of the downland, 1707  
 get fresh supplies of honey, 1620  
 of the mountains, 1853  
 of the stream, 1901  
 of the woodland, 5031  
 of the seaside, 5185  
 of the garden, 5200  
 garden flowers, picture, in colour, 3720  
 wild flowers, picture, in colour, 3728  
 flowers frozen in liquid air, picture, 1031  
 see also PLANTS AND VEGETABLE NAMES  
 Flowers of the Forest. The, written about,  
 1400, 3080  
 Flower-box, making a flower box for the  
 window, and pictures, 870  
 Flower-pots, made from old tin cans, and  
 pictures, 1720  
 Flower-stand, rustic, how to make, and  
 pictures, 4119  
 Flower-vase, how to make, of reeds, 1332  
 Flowering rush, 4908, picture, 4903  
 Fluid pressure, same in all directions, 1940  
 how to prove the equality of, 1948  
 Fluorine, gaseous element, 1558  
 Fluorspar, rock, 1216  
 Flushing, port of Holland, 1150  
 Fly, is produced from eggs, 1084  
 its life story, 1114  
 its strength, 4231  
 its sight, 5020  
 its hearing, 5021  
 pictures, 2323, 2320, 3257  
 Fly the garter, game, 3920  
 Fly-catcher, lives on flies, 2218  
 Fly orchis and picture, 1708, 4700, 4710  
 Flying, why we cannot fly, 2083  
 how men learn to fly, and pictures, 2080  
 Flying dragon, a bird, 30 1220  
 Flying-fish, what kind of fish it is, 2537  
 picture, in colour, 12  
 its battle for life, in colour, face 2536  
 Flying fox, 786, picture, 787  
 Flying gecko, 1220  
 Flying lemur, with picture, 788, 787  
 Flying machines, various kinds, and  
 pictures, 2689  
 the difficulty of making, 3978  
 see also BALLOON AND AERONAUTS  
 Flying phalanx, 787  
 Flying squirrel, 787, 788  
 Foam, why it is white, 1133  
 Focus, what it is, 2386

Fox, how fast it can run, 315  
 how it affects the highway, 1121  
 what causes it to disappear, 4400  
 why it is called a fox, 1071  
 Foxglove, how the foxglove helps the  
 train, and picture, 1021  
 Fox, how did the farmer enlarge the  
 fold? puzzle, 1215, 4154  
 Folk-song, what folk songs are, 1027  
 Folkstone, lived on the moon, 1150  
 Follen, Fitz - see Poetry, in box  
 Follow my leader, same, 445  
 Fomentation, how to apply, 3709  
 Foodants, how to make, 5112  
 Food, why it is called a, 1056  
 how our food is digested, 2111  
 how some animals can do without, 2118  
 food and it, 2035  
 how much food we require, 2700  
 Nature's wonderful food, 3701  
 how the diet of animals differs, 3915  
 how and when to eat, 4045  
 the real value of food, 4100  
 the value of meat as food, 3411  
 how animals use their food, 3230  
 why we have different tastes, 3230  
 what the first living things ate, 4114  
 world's food supply, 1907  
 why its price varies, 5245  
 passages in the mouth and throat,  
 picture, 1935  
 the different values of, picture, 2035  
 Fool, the rich fool, parable, 3901  
 how did the king's sister escape from  
 prison? and picture, 2074, 2174  
 why fools were employed by kings, 1274  
 Fool's parsley, and picture, 4420  
 Fool, why our feet do not wear away,  
 2118  
 how the foot is formed, 2546  
 used as band by heavy workers, 4257  
 bones, picture, 2715  
 Foot-passengers, rules of the road for, 4200  
 Football, the game of football, 1928  
 For want of the nail, rhyme in colour, 2012  
 Foraminifera, form chalk cliffs, 2535  
 Forb idden room, story, 1085  
 Forced vibration, 1911  
 Ford Edward Onslow, sculptor, 4102  
 his statue of General Gordon, 4170  
 Forearm, part of the arm, 1711, 2545  
 Foreign language, difficulty of, 1077  
 Foreign words and phrases, 1707  
 Ford, Dr., studied bees, 842  
 and dragon flies, 4210  
 Forests, how forests were buried, 2798  
 deserts and forests, 3131  
 forest which has turned to stone, 3133  
 the source of life, 3113  
 what happens when destroyed, 1130  
 picture, 450  
 of the Old World, picture, 9114  
 of the New World, picture, 1135  
 Forfarshire, The, wrecked, 191  
 Forgets, and how to pay them, 5104  
 Forget-me-not, its story, 493  
 when to plant it, 1500, 3288  
 what it is like, 4970  
 Forgiveness, if there were none, 5024  
 Fork, for digging and planting, 331  
 how it came into use, 1715  
 how it is made, pictures, 1739  
 Fork-tailed spoon, picture, 4735  
 Formalin, used, where it lives, 1020  
 Formic acid, to preserve things, 1873  
 Formicium, in bodies of ants, 842, 2943  
 picture, 3916  
 Formosa, Island, 1147  
 Formula, what it means, 1067  
 Forster, George, accompanied Captain  
 Cook, 5151  
 Fort Chyppesyan, its fur trade, and  
 picture, 2728  
 North Bridge, how it was built, 1820  
 pictures, 1825, 1829  
 as seen by engine driver, picture, 1831  
 North, river, its wide mouth, 185  
 North valley, coal is found, 190  
 Fortune telling, by character, 5211  
 Fortunes of Nigel, The, story, 1493  
 Forum, in Rome, 1015, 5201, 5208  
 Fossils, how we find them, 28  
 where they are found, 2880  
 what the name means, 2991  
 how they are formed, 2892  
 how to make a collection, 4218  
 Fossil fish, picture, 2894

Fontaine, why water fountains, with  
 604  
 Fountain-pen, how to choose one  
 Fowl and jewel, fable, and picture  
 Fowl, the fat and the lean fowl  
 and picture, 1451  
 come from wild birds, 1513  
 how to choose them, 4071, 1072  
 house, picture, 1871  
 drink, a fountain, picture, 1042  
 Fowler, Sir John, built the  
 Underground Railway, 504  
 and the North Bridge, 1529  
 Fox, what kind of animal it is, 280  
 fox and the crow, fable, 420  
 fox and the wolf, fable, 420  
 fox and grapes, fable, and picture  
 fox repaid in his own coin, Cant  
 Tale, 634  
 fox and the faithful hound, story  
 fox and the ass, fable, and picture  
 1451  
 hunter, fox and the sheep, story  
 change its coat in winter, 1777  
 fox and the mark, and picture, 21  
 fox and wolf, fable, and picture, 2  
 how the word is derived, 3230  
 fox and the lion, fable, 2291, 1710  
 fox and the goat, fable, 3291, 3311  
 fox and the cat, fable, and picture, 2  
 fox in the hole, game, 1929  
 fox and chickens, game, 4144  
 fox and the frog, fable, 1614  
 fox, picture, in colour, 252  
 fox and his wife, picture, in colour, 21  
 Fox, Charles James, and slavery, 1011  
 how he governed the country, 2354  
 portrait, 2179  
 Fox George, imprisonment, 1320  
 Foxglove, gives nectar only to bees, 27  
 what it is like, 1193  
 pictures, 347, 4191  
 Foxtail grasses, pictures, 1331, 2897  
 Fracture, green stick fracture, 2139  
 how to treat, 3119  
 Fram, exploring vessel, 1726  
 Franco, how the French reached Moscow  
 story, with picture in colour, 821  
 war over Spanish succession, 820  
 saved by Joan of Arc, 904  
 disputes about Canada, 1098, 1112, 124  
 war about India, 1003, 1114, 1709  
 takes Cuba, 1252  
 flag, 1640  
 history to the Revolution, 2193  
 nicknames of kings, 2195  
 in the Revolution, 2207  
 National Assembly's power, 2208  
 National Guard formed, 2270, 4058  
 became an empire, 2276  
 civil war began, 2277  
 as it is to day, 2280  
 its climate, 2100  
 rivers and canals, 2302  
 Industries, 2394  
 towns and people, 2396  
 government, 2188  
 colonies, 2399, 4261  
 took Alsace and Lorraine, 2528  
 helped Greece, 3220  
 defeat at Cape St. Vincent, 4360  
 Spain occupied, 3382  
 war with Russia, 3631  
 French revolutionists, 4053  
 sculpture revived, 4101  
 interference in Mexico, 4390  
 population, 4907, 5255  
 pictures  
 flag, picture in colour, 1041  
 maps, 2193, 2202, 2301  
 army marching against the Germans,  
 picture, 2642  
 light from Vittoria, picture, 3357  
 army entering Mexico, picture, 4385  
 Francis II, emperor of Austria, 2530  
 Francis I, king of France, knighted by  
 Bayard, 812  
 held gay courts, 2198  
 encouraged art, 1101  
 Francis II, king of France, 2198  
 Francis of Assisi, story of his life, 935  
 among the birds, picture, 987  
 his death, picture, 4588  
 Francis Joseph I, emperor of Austria,  
 and portrait, 2551, 2550  
 Francis Joseph II, emperor of Germany,  
 met Catherine II, of Russia, 3011  
 Francis Joseph glacier, picture, 1456



Games, hold fast! let go! 333  
 hoop parade, 1027  
 hoop race, 1027  
 hop, skip, and a jump, 3611  
 house paper chase, 331  
 how many miles to Babylon? 4144  
 how, when, and where? 115  
 hunt the ring, 333  
 hunt the slipper, 333  
 hunt the stag, 4027  
 I love my love, 115  
 I spy, 418  
 jingling, 5000  
 jolly miller, 3614  
 kiss in the ring 1144  
 lawn tennis, 4345  
 leap frog, 568  
 leaping pole, 3614  
 list in this book, 5204  
 living waterworks, 5290  
 magic answers, 230  
 marbles, 5108  
 menagerie race, 4560  
 motor race, 4242  
 moving figures with the hand, 5103  
 nine holes, 1078  
 noughts and crosses, 5113  
 object game, 231  
 obstacle race, 3614  
 old maid, 1885  
 oranges and lemons, 4144, 5196  
 outlines, 5113  
 pee ku, 3920  
 picking plums, 5106  
 pitchstone, 5100  
 posting, 4027  
 posture, 1078  
 prisoner's base, 3920  
 proverbial, 230, 5202  
 puss in the corner, 333  
 putting on the donkey's tail, 5000  
 pyramids, 5106  
 race with clothes basket, 2252  
 Red Indian race, 4212  
 rhymes, 115  
 ring-taw, 5106  
 round tag, 448  
 rounders, 5289  
 Russian gossip, 115  
 sack race, 568  
 schoolmistress, 231  
 the scruplet, 5106  
 Simon says, 230  
 sixpenny telegrams, 231  
 slate and pencil games, 5113  
 snap, 4072  
 snap snap snorum, 4885  
 soap-bubbles, 3725  
 spade the gardener, 1885  
 spelling bee, 115  
 spoons, 5000  
 stand up megs, 5106  
 step-lapchase, 563  
 stick and ring, 3725  
 stool-ball, 4029  
 throwing light, 231  
 throwing the cricket-ball, 1078  
 tip cat, 568  
 tit tat toe, 334  
 Tom Tiddler's ground, 568  
 touch, 148  
 trap ball, 1078  
 traveller and the wolves, 568  
 tug-of-war, 568  
 turnspikes, 4027  
 up to London, 5113  
 winning, 418  
 what is it? 2166, 2570  
 what is wrong? 5202  
 wheelbarrow race, 4212  
 where is it? 2350  
 why is it? 2570, 2660  
 winks, 231  
 wolf, 374  
 word-marking, 230  
 you mustn't laugh! 231  
 zoo guess, 2153  
 Ganges, river, in India, 1545, 1516  
 pilgrims' bath-rug, picture, 1540  
 Gannet, bird 1612 picture, 1631  
 Ganoids, fishes, 3678  
 Garden, necessary tools for gardening, and pictures, 331  
 thinning out of plants 147  
 how to plant out, with picture, 653, 3233, 3610  
 how did the father divide his garden? puzzle, and pictures, 2465, 2565

Garden, indoor garden without soil, 2561  
 how to pot plants, 3826  
 flower garden, in April, 331, 116, in May, 563, 658, in June, 755, 867, in July, 976, 1071, in August, 1188, 1287, in September, 1350, 1509, in October, 1610, 1810, in November, 1930, 2042; in December, 2152, 2251  
 vegetable garden, in March, 2978, in April, 3671, 3176, in May, 3288, 3400; in June, 3514, 4610, in July, 3726, 3826, in the middle of August, 3922, at the end of September, 4753, at the end of October, 4570  
 school children learning gardening in Western Australia, pictures, 1363

SEE ALSO PLANTS

Garden of the Loves, picture, 4500  
 Garden cave, and pictures, 5001  
 Garden cities, what they are, 2380  
 Garden gate, game, 333  
 Garden party games, 4212  
 Garden quoits, how to play, 3614  
 Garden seat, and picture, 3713  
 Garden spider, picture, 1299  
 Gardiner, Allen, missionary, 3486, picture, 3487  
 Garibaldi, Giuseppe, patriot, 908, 3024 picture, 908  
 Garner, Eric, portrait, 2797  
 Garonne, river, in France, 2302  
 Garrett, Mavis, portrait, 3011  
 Garriek, David, comedian Goldsmith, 1772 wrote Hearts of Oak, 3738  
 his connection with Johnson, 1078  
 Garriek at Reynolds' house, picture, 1843  
 Garrison, Theodosia see Poetry-Index  
 Gary, Blasco de, said to have made a steamboat, 2408  
 Gas, lighter than air, 255  
 becomes liquid when cooled, 307  
 has no cohesion, 620  
 three wonderful gases, 1213  
 natural gas found near Pittsburg, 2066  
 the sun a mass of gas, 2082  
 the use of hot gases rising, 2233  
 meteors turn into gas, 2500  
 in stars, 2710  
 how the word was made, 2773  
 diffusion of gases, 3090, 4442  
 the same as vapour, 3786  
 kinetic theory of gases, 3407  
 specific gravity of gases, 3816  
 gases known in science as fluids, 3911  
 compressible, 3948  
 Boyle's law about pressure, 3918  
 can be liquefied by liquid air, 1050  
 Gas, coal, how our gas is made, and pictures, 251, 252  
 how it was discovered, 681  
 different colours in flame, 1860  
 why shade hung over gas moves, 4509  
 effect of wire gauze on flame, 4319  
 Gascoigne, chief justice, and Prince Henry, story, and picture, 4830  
 Gaseous stars, what they are, 2719  
 Gaskell, Mrs. life, 2595, portrait, 2593  
 Gasometer, how it stores gas, 251  
 Gate, names that come from it, 2977  
 Gate of Lions, 5004, picture, 5008  
 Gathering, in needlework, 328, 663  
 Gattamelata monument, picture, 4164  
 Gauchos branding an ox, picture, 4571  
 Gauzamat, battle of 5001  
 Gaul, country, 406, 2320, 2193  
 Gauls, attacked Rome, 606, 6262  
 Gautama, Buddha's real name, 2995  
 Gautier, Théophile, story of his cat, 2404  
 Gavelton, Piers, picture, 747  
 see correction on page 5296  
 Gavial, a kind of crocodile, 1221  
 Gay, John see Poetry Index  
 Gaza, how Samson carried the gates, 1260  
 Gebel-Tarik, led the Saracens, 3155  
 Gecko, a lizard, 1210, pictures, 1220, 1227  
 Geese, who guarded Rome, story, 600  
 Gehazi, how he became a leper, 2013  
 Gerranger Ford, picture, 3599  
 Geler, the faithful dog, story, 5210  
 General post, game, 231  
 Genesis. Book of, what we read in it 355  
 Geneva, war meeting held, 2968  
 Geneva, Council of, date, 5231  
 Geneva, Lake of, its size, 2960  
 Geneviève, St., her life, 2317  
 scenes in her life, pictures, 2317, 2318  
 Genghis Khan, led the Mongols, 3878

Genoa, its history, 3010, 3154  
 its docks, 3021, picture, 3023  
 Genet lady, game, 231  
 Gentian, family of plants, 4112  
 dwarf gentian, 1610  
 Gentianella, what it is like, 5193  
 Geoffrey, of Anjou, count, 1240  
 Geology, derivation of word, 2234  
 the earth's crumbling crust, 2387  
 what faults are, 2894  
 the earth's changing face, 3003  
 SEE ALSO FOSSILS  
 Geophilus, centipede, picture, 3297  
 George, St., and the dragon, story, a picture, 76  
 cross, 555, 850, pictures, 555, 850  
 story of flag of St. George, 2333  
 how to make living flag, 1031  
 St. George and the dragon, picture, 10  
 statue, picture, 4167  
 George I., king of England, 1007  
 why he was made king, 1257, 2710  
 nephew of Prince Rupert, 1895  
 tried to arrest Lady Nithsdale, 2203  
 portrait, 2710  
 George II., king of England, 1008  
 power of England in his reign, 2710  
 portrait, 2710  
 George III., king of England, 1008  
 portraits destroyed in America, 2022  
 what kind of king he was, 2710  
 review of Volunteers, picture, 2709  
 his watch, picture, 5105  
 George IV., king of England, 1009  
 George I., king of Greece, 3508  
 George, Black, Serbian leader, 3222  
 Georgia, United States, 2018  
 Georgia, Kingdom of Asia, 3631, 3878  
 Geraint and Enid, story, and pictures, 1977  
 Geranium, cultivation, 147, 658  
 likes to be fairly dry, 867, 2251, 3514  
 how to treat cuttings, 1188  
 meaning of name, 3178  
 the geranium family, 4111, 5270  
 pictures, 5275  
 Gerfalcon see Jerfalcon  
 Germ, is a microbe, 840  
 German dwarf, entertainment, 2249  
 German East Africa, where it is, 4202  
 German ins, 6272  
 German silver, what it is, 1870  
 German tribes, in Switzerland, 2062  
 in Iberian Peninsula, 3154  
 Germander speedwell, 4193 picture, 4191  
 Germanicus, a famous soldier, 525  
 Germanus, Bishop, and Geneviève, 2317  
 Germany, united under king of Prussia, 1040, 2277, 2640  
 its flag, 1640  
 the beginnings of Germany, 2521  
 the Peasants' War, 2527  
 the making of Germany, 2635  
 Reichstag formed, 2610  
 as it is to-day, 2747  
 army, 2748  
 navy and trade, 2750  
 people and education, 2755  
 possessions in Africa, 2756, 4262  
 national song, 2756  
 folk songs in English verse, 3027  
 population increase, 1907  
 care of children, 5284  
 war with France see Franco German War  
 PICTURES OF GERMANY  
 flag, in colour, 1611  
 Germans as hunters, 2520  
 village in olden times, 2520  
 arms of Germany, 2521  
 growth of empire, 2634  
 children's open-air life, 2753  
 Gessler, how he treated William Tell, 1689  
 Gethsemane, picture, 3323  
 Geyser, what it is, 3232, 3598, picture, 4111  
 Ghent, canal to Antwerp, 3455  
 its industries, 3158, 3461  
 oppressed by Charles V., 1160  
 Ghibellines, party in Italy, 3018  
 Ghiberti, L. life, 2782, portrait, 2779  
 made gates of Florence Baptistery, 4161  
 portrait, 2779  
 Ghoorlas, rice in India, 1702  
 Ghosts, belief in, 3213  
 Giant, with three golden hairs, story, and pictures in colour, 821  
 who carried the poor, story, 988  
 of the Peak, legend, 2371

- Grass, how it grows everywhere, 2895  
 Importance as food, 2923  
 how it is made, 3862  
 that grows at the seaside, 5193  
 why it turns yellow when cut, 5250  
 pictures, 1331, 1333, 2898
- Grass of Parnassus, flower, 1112, 5036  
 picture, 5031
- Grass pea, flower, what it is like, 1202
- Grass snake, 1373
- Grasshopper, and the ant, fable, 2491  
 how it differs from the locust, 3141  
 picture, 3138, in colour, face 3141
- Gravel, made by water, 470  
 forms part of earth's crust, 2893
- Graves, Alfred Percival see Poetry Index
- Gravitation, explanation of law, 289, 394  
 law discovered by Isaac Newton, 289, 1941, 2426
- Galileo's discovery, 290, 3551  
 makes the sun shrink, 421  
 has helped to shape the earth, 476  
 not so powerful as cohesion, 820  
 what would happen if it ceased, 1577  
 affects water, 1675  
 use of law in astronomy, 1948  
 force in the moon, 2221  
 balances the sun and planets, 2280  
 weight depends on it, 3231, 3671  
 increases rate of falling bodies, 3432, 3672, 3814
- how it affects us in walking, 3437  
 how it is opposed, 3544  
 the working of the law, 3547  
 a universal law, 3701  
 its force varies, 3813  
 the pull of the earth, 3835  
 how a tree resists it, 3901  
 large bodies attract smaller ones, 3865  
 brings a stone to earth, 4349  
 why it does not pull clouds down, 4908  
 keeps the air round the earth, 5024  
 electricity theory, 5238  
 centre of gravity, see Centre of gravity
- seals and globe showing effect of earth's  
 gravitation, picture, 3551
- Gray, Elsha, patented a telephone, 4317
- Gray, Stephen, experimented with electricity, 2115, 1914
- Gray, Thomas, see Poetry Index
- Greece, how to remove, 1156
- Great auk, 29, 1030, 1428, picture, 1125
- Great Barrier Reef, Australia, 1480
- Great Bear, made up of fixed stars, 236  
 called the Plough, 2612  
 legend of the Great Bear, 3314  
 pictures, 242, 2611, 2614, 2617
- Great Belt, between Danish islands, 3598
- Great bilberry, what it is like, 1834
- Great blindweed, picture, 1189
- Great bird of paradise, 1738, picture, 1742
- Great Britain, name for England and Scotland, 890
- SEE ALSO BRITISH ISLES, BRITISH EMPIRE, ENGLAND, SCOTLAND, WALES
- Great butterwort, 1833
- Great Dividing Range, in Australia, 1718
- Great Eastern, ship, 2176, picture, 2473
- Great Expectations, story of the novel, 2135
- Great Fire of London see London
- Great Gable Mountain, picture, 5017
- Great Mogul - see Mogul
- Great northern diver, 1032, picture, 1631
- Great Paul, largest bell in London, 1541
- Great Plague of London, see Plague
- Great Rebellion, see Civil War
- Great Salt Lake 1893, 3132
- Great titmouse, 2116, pictures, 1744, 2217
- Great Tom of Westminster, 1536
- Great Trek, 1789
- Great velerian, 4970, picture, 4985
- Great water beetle, picture, face 1141
- Great Western, ship, 170, 1472, picture, 2473
- Great Western Railway, 70, 185
- Greater calandine, its family, 4110
- Greater Hellas, Grecian colonies, 3124
- Greater Mr., commissioner, 1914
- Greece and Greece, power in Egypt, 141, 1799
- war with Trojan, 579  
 not used in building, 622  
 great men of Greece, 1401  
 the law, 1410  
 conquering, studied, 6125, 1932  
 conquered the Punjab, 1696
- Greece and Greeks, stories of Greece, 2301  
 state of thought at time of Christ's birth, 2629  
 love of music, 2777  
 history, 3150, 3219, 5121, 5124, 5129, 5130  
 conquered by Mohammed II., 3150  
 belonged to the Venetians, 3158  
 sculpture, 1100, 5128  
 competitions in music and acting, 5004  
 war with the Persians, 5060  
 retreat from Cunaxa, 5061, 5076  
 glory that was Greece, 5121  
 pottery, 5126  
 influence on the world, 5126  
 temples, 5128  
 thinkers of Greece, picture, face 1301  
 war with Phoenicians, 5129  
 war with Rome, 5283  
 flag, picture, in colour, 1641  
 Greek sailor, picture, 3235
- Greedy shepherd, the, story, and pictures, 1046
- Greek Church see Eastern Church
- Greek kalends, its meaning, 3508
- Greek language, study revived, 3156
- Greek woman, with sick daughter, miracle, 3901
- Green, colour, 859, 1508
- Green, John Richard, description of Bede's death, 2134
- Green, Kitty, and the giant, story, 2371
- Greenbottle fly, picture, face 3141
- Green-fly see Aphid
- Green-man orchid, 1703
- Green-winged orchid, 4290
- Greenaway, Kate see Poetry Index
- Greene, Albert Gorton see Poetry Index
- Greenfinch, 2058, picture, 2060
- Greenland, its exploration, 3594, 4724
- Greenland shark, 2444
- Greenland whale see Right whale
- Greenock, has large docks, 267
- Greenwich Observatory, 1662
- Greenwich time, what it is, 3036
- Gregorians, chants, 2157
- Gregory the Great, pope, sent Augustine to England, 512, 2329  
 wrote hymns, 1905  
 his goodness, 2157  
 kept the Lombards in check, 3014  
 pictures, 2160, 4336
- Gregory VII., pope, tried to start a holy war, 1586
- quarrels with the kings, 2161, 2526  
 and Henry IV of Germany, picture, 2163
- Grenada, Island, Caribs' last stand, 1877  
 its harbour, 1878
- plague of ants, 2950
- Greenville, Sir Richard, 3662, 1205
- Gresham, Sir Thomas, his crest, 4322
- Grethel see Hansel and Grethel
- Greville, Sir Fulke, his epitaph, 433  
 poem see Poetry Index
- Grey, colour, 859, 4608
- Grey, Lady Jane, 801, 1251, 2066
- Grey-hen, a heath fowl, 1518
- Grey parrot, picture, 1713
- Grey rat, picture, 791
- Grey shoulder knot moth, picture, 3413
- Gribble, damages timber, 2587
- Grimin vulture, picture, 1811
- Grimse, a young salmon, 2680
- Grimm brothers, their lives, 1408
- Grimby, a fishing town, 190
- Grimston, Lady Anne, her story, 1087  
 her grave, picture, 1687
- Grindley, William, portrait, 2879
- Gronhof, a road in Norway, picture, 3599
- Griselda, Canterbury Tale, 633
- Grislybeard, king, story, 1209
- Gristle, is cartilage, 2439
- Gristle bear, pictures, 263, 4729
- Groat, coin, picture, 5101
- Groot, Hugo van see Grotius
- Grosbeak, cardinal, bird, 2601
- Grotius, 2380, picture, 2631
- Ground-ivy, picture, 4612
- Ground-plant, flower, 1715; picture, 4711
- Groundsel, its family, 4112, picture, 4713
- Grouse, its family, 1515, picture, 1517
- Growth, why it stops, 2416, 3979,  
 its cause, 4745
- Grubs, how to get rid of them, 7288
- Guadalupe, river, in Spain, 3334
- Guadiana, river, 3331
- Guajajuato, in Mexico, 4386; picture, Guard the block, game, 3814
- Guatemala, 1392, pictures, 1613, 1388
- Guaayaquil, canoe market, picture, 43
- Gudgeon, used as bait, 2681, picture, 43
- Gudger rose, 3952, 4495, picture, 44
- Guelderland, in the Netherlands, 3158
- Guelfs, party in Italy, 3018
- Guericke, Otto von, electric light discovered, 2114, portrait, 2113
- metal cups experiment, picture, 2121
- Guesclin, Bertrand du, and picture, 26
- Guevi, small antelope, 374, picture, 37
- Guiana, dependent states, 4500, 4580  
 British Guiana's heavy rainfall, 1879
- Gudi, Tommaso see Masaccio
- Guildhall, London, and pictures, 1318
- Gullemot, bird, 1630, picture, 1631
- Gullostine, used for executions, 2272
- Guinea Coast, partly British, 1765
- Guinea-fowl, 1520, picture, 1519
- Guinea-pig, different kinds, 502,  
 how to keep them, 4458  
 pictures, 503
- hair, through microscope, picture, 232
- Gumever, King Arthur's queen, 928, 331  
 pictures, 928, 1977, 3311
- Guiscard, Robert, 1587
- Guse, duke of, story of, 3352
- Gull, the various kinds, 1028  
 pictures, 32, 1029, 1714
- Guliet, what it is, 2208, 2343
- Gulliver's Travels, and pictures, 1309, 1311
- Gum-tree, the eucalyptus, 1364
- Gun, why the flash precedes the noise, 839  
 why it makes a noise, 2228  
 how it illustrates laws of motion, 3470  
 a son of a gun, story, 3850  
 picture, 2227
- Gundulf, built the Tower, 1158
- Gunpowder, what it is made of, 2223
- Gunpowder Plot, story of, 892, 1791
- Gunwale, of a ship, 3581
- Gurdun, Bertrand de, shot Richard I, 2001
- Gurliitt, Cornelius, wrote music, 2264
- Gustavus Adolphus, king of Sweden, helped Protestants in Germany, 2528  
 gained lands from Germany, 3586  
 endowed Upsala University, 3600  
 closed the Baltic to the Russians, 3628  
 praying for victory, picture, 3591
- Gustavus Vasa, king of Sweden, 3591  
 planned the Gota Canal, 3800  
 founded Helsingfors, 3763
- with a drinking party, picture, 3593
- Gutenberg, John, life, 3568, portrait, 3567
- Guthrie, Dr Thomas, his work for ragged children, and picture, 3700
- Guy, of Languish, king of Jerusalem, 1589
- Guy, of Warwick, story of his life, 1322
- Guy Manningham, a novel, 1193, 1603
- Gymkhana, for Christmas, 2232
- Gymnasium, meaning of word, 2771
- Gynasium, Swedish system, 1800
- Gypsum, a form of salt, 1800, 4246
- Gyroscope, picture, 1901
- Gyroscope train, see Mono rail
- H
- Haakon V, king of Norway, 3062
- Haakon VII., king of Norway, 3598
- Haarlem, town in Holland, 3450, 3458  
 besieged by the Spaniards, 3460
- Habeas Corpus Act, 338
- Habitat, of a plant, 1919
- Habits, their breaking, 5249
- Haddock, fish, and picture, 2532, 2633
- Hadrian, emperor, 527; portrait, 529
- Hadrian's wall, 528
- Haemoglobin, what it is, 1384, 1665
- Hagar, her story, 240, 472; picture, 244
- Hague, The, capital of Holland, 1456  
 has been useful Japanese work, 4150
- Hail, made of ice crystals, 2073
- Hainault, lords of, in Netherlands, 3453
- Hair, its use, 1416, 2030  
 what the hair is, 1991  
 why hair turns grey, 2415  
 the girl who sold her hair, story, 3165  
 why it goes on growing, 3564  
 why it does not hurt when cut, 3661, 4121  
 why it stands on end with fright, 4213  
 masqued hair, picture, 1801, 1601
- Hare grass, picture, 2902
- Harpin work, and picture, 1567
- Hairy violet, 4703



What they require, 1010

- Ices, how to make without a freezer, 3016  
 why too many, let's are bad, 1952  
 Ichneumon fly, 2900, picture, 270  
 pictures, face 3111 and 1257  
 Ichthyosaurus, 29, 2890, picture, 27  
 Ichinos, helped to build Acropolis, 5123  
 Ida, little Ida's flowers, story, with pictures, 3502  
 Idiot, what the word means, 2809, 3231  
 Idol, The rock, picture, 1055  
 Idolatry, praying to strange gods, 301  
 Iduna, and the golden apples story, with picture, 3581, 1582  
 Ightham Moat, picture, 2119  
 Igneous rocks, are made by fire, 3015  
 Ignis fatuus, the will o' the wisp, 3512  
 Iguanas, lizard, with picture 1210, 1225  
 Iguanodon lizard 29, picture 27  
 Iguaçu Falls, and picture 1199  
   see correction on page 5206  
 Ikagame temple, picture, 4155  
 Ikons, what they are, 1750  
 Ilfracombe, origin of the name, 3402  
 Iliad, the story of, 539 5121  
 Illness, why we do not get some illnesses twice, 2116  
   what the pulse tells us, 4442  
   why damp air makes us ill, 4505  
 Illyria, a country, 119  
 Ilmen, Lake in Russia, 3750  
 Imitation influence on actions, 5115  
 Imp, with a disappearing head, trick, with picture, 3390  
 Impoverished, things that cannot be weighed, 1016  
 Ina, king of Wessex, story, 2402  
 Incandescent light, came into use, 681  
 Incas, their conquest by Pizarro, 1502  
   legends about, 1504  
 Incisors, the flat front teeth, 2098  
 Incubator, hatches eggs, 1514, 2229  
 Independence, Declaration of, see Declaration of Independence  
 Independence Day, what it is, 2022  
 India, size and population, 70, 1545  
   finding the way by sea, 39  
   our tea chiefly comes from, 58  
   French and English at war, 1008, 1114, 1700  
   why it is hotter than England, 1080  
   England traded with India, 1112, 1098  
   how it became a British possession, 1111, 1098  
 animals, 1545  
 climate and physical features, 1545, 1516  
 towns and buildings, 1518  
 people and religion, 1550, 1695, 1696  
 how the British rule in, 1552  
 its history, 1695  
 its land at war with natives, 1700  
 its trees cut down, 3050  
 Indian Mutiny, see Indian Mutiny  
 ILLUSTRATIONS  
 maps, 1511 1695, 1875  
 home life of the people, 1547  
 flag of India, in colour, 1042  
 old and new rulers, 1694  
 native soldiers, 1695  
 a farmer and a warrior, 1697  
 natives and their rulers, 1697  
 the splendour of travelling in India, 1701  
 a rope bridge, 1837  
 India-rubber, comes from trees, 695  
   why it removes pencil marks, 3095  
   where it comes from, 3512  
   how it is prepared, 3513  
 Indian cattle, picture, 389  
 Indian corn, see Maize  
 Indian leaf butterfly, picture, 7409  
 Indian Mutiny, the noble Sikh in, 300  
   broke out, 1012, 1702  
   talks of, 1913  
 Indian pink, see Chinese pink  
 Indian ray, picture, 2440  
 Indian red, a colour used in painting, 1811  
 Indians, American, how to make an Indian from straw, with picture, 1102  
   lived in Canada, 1242 1246  
   natives of the New World, 1877, 4384  
   fought with the American settlers, 2018  
   legend of the stars, 513  
   race of people, 1242  
 Botocudo Indians primitive habits, 4503  
 pictures, 4242, 1575  
 Indigo a colour used in painting, 1811  
 Indo-China, belongs to France, 2399  
 Indulgences, sold by the pope, 5237  
 Indus, river, its size, 1515  
   flows through the Punjab, 1546  
   rivers in Tibet, 1946  
 Industries, the children's map of, 261  
 Inertia, what it is, 2835, 3489  
 Infection, is carried by germs, 3972  
 Infernal machine, first made, 1227  
 Infusoria, how they multiply, 2435  
 how important they are, 3677  
 Ingelow, Jean, see Poetry Index  
 Ingoldby Legends, by Batham, 711  
 Ink, how to make for a hectograph, 2255  
 how to make invisible inks, 2255  
 is carried by some fish, 2152  
 how to remove ink-spots, 1450  
 why it writes better on paper than on a slate, 4904  
 why it stains, 5189  
 Inlman, battle of, 3032  
 Inn, river, 2850, 2901  
 Innocence, age of, frontispiece volume I  
 Innocent III, a pope, 2185, 1910, 1913  
 Innsbruck, 2554, picture, 2950  
 Innuits, see Eskimos  
 Inorganic chemistry, see Chemistry  
 Inquisition, what it was, 1960, 3358  
   established in the Netherlands, 3460  
   picture, 3461  
 Insects, what they are, 617  
   talk to each other, 1269  
   useful to plants, 1879  
   their homes in growths on trees, 2422  
   how numerous they are, 2815  
   some foes of man, 3139  
   some friends of man, 3255  
   their eyes, 3260, 4215  
   how they protect themselves, 3407  
   how to get rid of in the garden, 3726  
   why they visit flowers, 3734  
   their power of hearing, 5021  
   plants that eat insects, 5031  
   in natural colours, picture, face 3141  
   that pretend to be plants, picture, 3409  
 Inspiration, is breathing in, 1637  
 Instep, how it is formed, 2546  
 Instinct, is very useful, 4231  
   power of, in animals, 4519  
   how it decides actions, 5172  
 Interest, is necessary to thought, 1360, 5020  
 Interlaken, picture, 2063  
 Intra-molecular, what the term means, 1033  
 Inventor, how he thinks, 1942  
 thinking out problems, picture, 678  
 Inverness, town, 186, 188  
 Inverse squares, the law of, 2504  
 Inversely, what is meant by varying inversely, 1320  
 Invertebrates, animals without a backbone, 732, 2137  
 Involuntary muscle, 2623  
 Iodine, shows if starch is present, 2096  
   what it is, 3093  
 Ionians, a Hellenic tribe, 5121, 5128  
 Ionian, agricultural implements, 265  
   what the name means, 3402  
 Iquitos, town, 4498, 4571  
 Ireland, where it is, 34, 185  
   its beauty from a bird's eye view, 66  
   climate and physical features, 185  
   famous for linen, 263  
   a present to Henry II, 572, 2162  
   Richard II's reign in, 750  
   Henry VIII tried to settle Ireland, 801  
   Ulster settlers, 802  
   rose in favour of Charles I, 895  
   union with Great Britain, 1010, 1639  
   lane in, picture, 189  
 Ireton, Henry, was a great man in the Commonwealth, 896  
   how Charles II treated his body, 4640  
   picture, 1898  
 Iris, means rainbow, 3178  
 Iris, is part of the eye, 3434  
 Iris, flower, different kinds, 5272  
 Irish burnet moth, picture, in colour, face 3141  
 Irish elk, 374  
 Irish flag, the story of, 2333  
 Irish Sea, 346, 348  
 Irkutsk, has gold smelting works, 3752  
 Iron, in Northumberland and Durham, 267  
   why an iron ship floats, with picture, 697  
   iron sinks, 697  
   heat travels along an iron bar, 1061  
   is necessary to life, 1385  
   is the most valuable metal, 1390  
   why iron rusts, 1776  
 Iron, bridge made of cast iron, 1625  
   is in the sun, 2068  
   is found in nature, 2569  
   loses weight when it rusts, 3235  
   stains cliffs brown, 3359  
   why it feels colder than wood, 3384  
   why it turns red when hot, 3515  
   swedish iron is good for steel, 3460  
   can be bent when heated, 3757  
   it can float on mercury, 3757  
   its specific gravity, 3816  
   gets tired, 3077  
   will not rust in Lake Titicaca, 4578  
   rusts slowly with fire, 4312  
 Iron Age, 624, 1390  
 Iron pyrites, where they are found, 1216  
 Ironsides Cromwell's army, 394, 1893  
 Ironsides Indians, 1247  
 Irradiation, how it affects the eye, 2853  
   what it means, 3384  
 Irving, Washington, 5084; portrait, 5631  
 Isaac, names derived from, 2868  
 Isaac, the patriarch, 125, 472, 62  
   picture, 630  
 Isabella, of Spain, and Columbus, 37,  
   stories of her goodness, 2413  
   married Ferdinand of Aragon, 1458  
   at the siege of Granada, 3368  
   offering her jewels, picture, 2113  
 Isabella, wife of Edward II, 1250  
 Isaiah, prophet, 123, 2245, picture, 12  
 Ishmael, was sent into the desert, 472  
 Isinglass, what it is made from, 2511  
 Islam, see Mohammed  
 Island, how it is formed, 3004  
   an island's eyes and arms, 4425  
 Isle of Man, see Man, Isle of  
 Isle of Wight, see Wight, Isle of  
 Ismail, became shah of Persia, 3580  
 Isolt, the story of her life, 3211  
 Isphahan, 3880, 3381, picture, 3977  
 Israelites, see Jews  
 Issues, Persians dictated at, 1506  
   pictures, 3059  
 Istria, is a part of Austria, 2860  
 Italy, became one nation, 908, 3024  
 flag, with picture, in colour, 1640, 1841  
 story of Italy under the Austrians, 1654  
 was invaded by Napoleon, 2471  
 southern Italy added to the German states, 2527  
 its shape and position, 3011  
 physical features, 3012  
 its history, 3012  
 its towns, 3014  
 its progress, 3024  
 the seat of the new learning, 3156  
 its possessions in Africa, 1262  
 won by the Romans, 5262, 5266  
 map of, picture, 3014  
 Ithaca, the kingdom of Ulysses, 542  
 Ivan III, of Russia, married a Greek, 1040  
 was a powerful ruler, 3020  
 Ivan IV, of Russia, 3626  
 Ivanhoe, story of the novel, with picture 1615, 1617  
 Ivory, from elephant's tusks, 176, 2095  
   is got from prehistoric animals, 3752  
 Ivory Castle, the princess of story, 102  
 Ivory Maiden, who came to life, story, 71  
 Ivy, why it clings to walls, 149  
   will grow in water, 2564  
   has flat flowers, 7738  
   pictures, 312, 652  
 Ivy-leaved bellflower, 5038  
 Ivy-leaved geranium, 658, picture, 5275  
 Iwakuni Bridge, with picture, 1837  
 Jabin, fought against the Israelites, 1094  
 Jacana, a bird, 1958  
 Jaenith, same word as hyacinth, 3178  
 Jack, a coat worn by sailors, 2333  
 Jack, the luck of simple Jack, story, 2740  
 Jack and the Beanstalk, story, with pictures, 3781  
 Jack the Giant Killer, story, with pictures, 3784  
 Jackal, what it is like, 287  
   picture, 282  
 Jackdaw, the vain Jackdaw, fable, with picture, 935  
   builds in high buildings, 1848  
   and pigeons, fable, with picture, 3854  
   pictures, 1744, 1817  
 Jackson, General, his clever horse, 124  
 Jackson, Helen H, see Poetry Index

- Johannesburg, picture, 1767  
 Johansen, Lieutenant, his expedition with Nansen, 1728  
 John, names derived from 2368  
 John, apostle, his Gospel, 2131, 2158, 3811, 5095  
 settled at Ephesus, 2330  
 story of his life, 509  
 with Mary, picture, 3535  
 John, king of England, signed Magna Carta, 571  
 plotted against his brother, 1250  
 had to submit to Innocent III, 2161  
 a wicked king, 2704  
 signing Magna Carta, picture 573  
 John III, king of Poland, defeated the Turks, 2528, 3158  
 rescued Vienna, 2850  
 John XXIII, pope, 4048  
 John, of Austria, 3157  
 John, of Gaunt, friend of Chaucer 3128  
 John the Baptist, his preaching, 2712  
 picture, 2713  
 John Bull, how the nickname arose, 2330  
 his picture 2331  
 John Chinaman, made of peanuts, with pictures 221  
 John Damascene, St., 1905  
 John Halifax, Gentleman, the story of the book, 3923, with pictures, 3927  
 Johnson, Samuel, how he sold Goldsmith's manuscript for him, 1732  
 what he said of Goldsmith, 1732  
 his life, 4678  
 what he said of Rousseau, 4811  
 what he said of Burke, 4816  
 reading Vicar of Wakefield, picture, 1731  
 pictures, 4675, 4681, 4813  
 Johnston, Sir Harry, brought a chimney to England 580  
 tried to find an ox, 1000  
 joints, making simple joints in wood, with pictures, 1315  
 more wood joints, with picture, 1510  
 how fish joints are made, 1511  
 how the joints of the head and limbs are formed, with picture, 2543  
 Jolly Miller, the, how to play it, 3611  
 Jonah, story of, with pictures, 2129, 2131  
 Jonathan, son of Saul, his life, 126, 1177  
 Jones, Mary, influenced by Palladio, 1161  
 Jonquil, flower, how she got the Bible, 300  
 Jonson, Ben, a great poet, 3320  
 poems see Poetry Index  
 Joppa, community of Nazarenes, 4531  
 picture, 4531  
 Joram, King, slain by Jehu, 2014  
 Jordan, river, in Palestine, 3671  
 Jorullo, a remarkable volcano 1186  
 Joseph, sold as a slave, 121, 1733  
 was a son of Jacob, 687  
 the story of his life, 807  
 in Egypt, 2010, 4786  
 was sold as a slave, picture, 122, 806  
 his brothers bring his coat to Jacob, picture, 808  
 interpreting the dreams, picture, 807  
 as prime minister of Egypt, picture, 2011  
 Joseph of Arimathea, and the Holy Grail, 929  
 Joseph, Jesus, 3536  
 hymns, 1995, 1996  
 Josephine, Napoleon's wife, 2276  
 Jones, brother of Jesus, 3162  
 Joshua, led the Israelites against the Amalekites, 1024  
 how he led Israelites into Canaan, 1093  
 pictures, 1092  
 Jostedal glacier, picture, 3599  
 Joutroy, marquis de, said to have made first steamboat, 2168  
 Joule, James Prescott, what he proved about heat, 1360  
 Jordan, Jean Baptiste, Napoleon's marshal, 1362  
 Jove - see Jupiter  
 Joy, George William, his pictures, 1147  
 Joy and Cordelia 113  
 Joy of Arc resting after a fight, 903  
 the pearl of his price, 1967  
 Wellington at a French camp, face 1755  
 Nelson about to join his first ship 4757  
 Jorcs, Cornel, was sent to Khrushchev, 1850  
 Jorcs, B. P. President of Mexico, 1890
- Judah, was ruled by Rehoboam, 1735  
 Judas, apostle see Thaddaeus  
 Judas Iscariot, his character, 3201  
 his betrayal of Jesus, 3324  
 going out, picture, 3325  
 brought back the thirty pieces of silver, picture, 3537  
 portrait, 5179  
 Judas Maccabaeus, delivered Jews, 901  
 Judge, who imprisoned a prince, story, and picture, 4830  
 Judy, the story of Punch and Judy, 1907  
 Juggernaut, a god of the Hindoos, 1550  
 Jugglers, the cleverest are Indians, 1878  
 Julian, the Apostle, tried to restore pagan worship, 3151  
 conquered by Sapor II, 5006  
 persecuted Christians, 5232  
 addressing Christians, picture, 3151  
 Julius Pass, had a Roman road, 2962  
 Julius, centurion in charge of Paul, 1791  
 Julius II, pope, built St Peter's, 1948  
 invited Raphael to Rome, 4952  
 tomb made by Michael Angelo, 1952  
 Julius Caesar, came to Britain, 349, 350  
 most famous of the Romans, 106  
 the first who wrote about England, 1695  
 started written history of Gauls, 2193  
 gave July its name, 2071, 1519  
 his conquests, 5263  
 his book on Gallic War, 5266  
 condemning Verres, picture, 401  
 the death of, picture, 401  
 Antony's speech, picture, 2917  
 carried in triumph, picture, 4518  
 July how it got its name, 2671, 4519  
 Jumbo, famous elephant, 136  
 Jumping beans, what they are, 2421  
 June, how it got its name, 2671, 4518  
 Jungfrau, The, a peak in the Alps, 2960  
 Juniper, what it is like, 4712  
 Junius, gave June its name, 1518  
 Junks, are Chinese boats, 4045  
 Juno, goddess, claimed golden apple 78  
 was the queen of the Roman gods, 2671  
 changed Callisto into a bear, 3314  
 was the wife of Jupiter, 1518  
 picture, 4518  
 Juno, temple of, 606  
 Jupiter, god, drove out Discord, 78  
 gave the frogs a king, 125  
 Jove is another name for 2670  
 changed Callisto into constellation, 3314  
 and the ass, fable, 3294, 3310  
 Jupiter, the planet, 236  
 Galileo discovered Jupiter's moons, 237  
 moons, or satellites, 210, 1032  
 is still hot, 1367  
 is small compared with the sun, 1944  
 how its surface moves, 2081  
 how it got its name, 2234  
 has tides, 2280  
 what is known about it, 2423  
 gets in the way of comets, 3005  
 is too hot to bear life, 3137  
 Jura Mountains, 2190, 2960  
 Justinian, Emperor, 2911, 1152, 3590  
 Jute, is brought from India, 263  
 Jutes, a people, came to England, 509  
 Jutland, is a peninsula, 3592
- K  
 Kaaba, temple, 3876, picture, 3001  
 Kabul, the British retreat from, 3933  
 Lord Roberts' march, 3933  
 picture, 1935  
 Kaffirs, compound, picture, 1761  
 pictures 1764, 1767  
 Kaim, caliph, gave up the caliphate, 3678  
 Kaiser-Wilhelm Canal see Kiel Canal  
 Kaiser Wilhelm II Land discovered, 4723  
 Kaka parrot, picture, 1713  
 Kakapo, bird, 1430, picture, 1131  
 Kaleidoscope, how to make, with picture, 111  
 Kalmar, union of see Calmar  
 Kalmucks, tribe, and picture, 3920  
 Kamehathia, explored by Behning, 3630  
 Kamera the proud king, story, 1525  
 Kammurabi see Hammurabi code  
 Kangaroo, Lord Roberts' march, 3933  
 its life story, 918  
 Kangaroo rat, a small kangaroo, 920  
 Kangaroo rat, a small kangaroo, 920  
 its life and teaching, 4622  
 pictures, 1623, 1625
- Kaolin, a white clay, 2394, 4156  
 Kapiolani, heroines of Southern Seas, 1  
 Kapleau, Professor, his theory of movement of stars, 2718, 4158  
 Karachi, is a port of India, 1548  
 Karakorum Mountains, 3932  
 Karnak, temples, ruins, 4787  
 pylon built by Seti I, picture, 5007  
 Kaskhar, where it is, 3934  
 Kate Barless, story, with picture, 157  
 Katrine, loch, in the Trossachs, 158  
 Kattegat, passage between Sweden and Denmark, 3600  
 Kaukeik Mountains, in Norway, 3592  
 tourists snowballing, picture, 3599  
 Kaulbach, his picture of Mofar, 3247  
 Kauri-tree, gives a sort of gum, 1158  
 Kay, Sir, one of Arthur's knights, 101, 922  
 Kazan Cathedral, in St. Petersburg, 3748  
 Kea, a bird that eats sheep, 1747  
 Kearney mono-rail, and picture, 1903  
 Keats, John, life, 3910, picture, 3907  
 poems see Poetry Index  
 Kable, John, wrote Sun of My Soul, 2000  
 poems see Poetry Index  
 Keeler, Prof. J. E., has photographed a nebula, 2865  
 Kelts, in the British Isles, 313  
 invaded Europe, 2351  
 lived in Switzerland, 2962  
 conquered by the Romans 3151  
 lived in the Netherlands, 3457  
 Kelvin, William Thompson, Lord, what he said a drop of water is 1561  
 what he said about seeds, 1775  
 was an electrician, 1121  
 what he supposed matter was, 3467  
 what he did for telegraphy, 3417  
 on dissipation of energy, 4168  
 on sensible and latent heat, 4471  
 and conservation of energy, 1176  
 his powers of invention, 1913  
 used wire to sound the sea, 5167  
 picture, 2113  
 Kempfenfelt, Richard, drowned, 390, 4191  
 Kempis, Thomas à, his life, 3937  
 picture, 1981  
 Ken, William, bishop, wrote hymns, 2000  
 picture, 1999  
 Kenya, Mt., is in Africa, 4254  
 Kenilworth, the story of the novel, 1492  
 Kennel, making one, and pictures, 5105  
 Kenneth, king of Scotland, 516, 3079  
 Kent, corn grown in, 185  
 is famous for hops, 168  
 was an old kingdom, 510  
 Kent cob, nut, 1905, picture, 1960  
 Kentish hall, where the ancient Britons fought the Romans, picture, 349  
 Kentish glory moth, picture, face 2993  
 Kentucky blind fish, with picture, 2683  
 Kepler, John, a story about, 1202  
 the story of his life, 1638  
 believed in astrology, 1910  
 discovered movements of planets, 2426  
 saw a comet, 2497  
 his laws of planetary motion, 3517  
 his law explained by picture, 3517  
 picture, 1658  
 Kern Knotts Crack, picture 6017  
 Kerry, his great cliffs on the shore, 189  
 Kestrel hawk, 1846, pictures, 1711, 1847  
 Ketch, ship, 3911, picture, 3913  
 Kettle, Wm., hymn writer, 1095  
 Ketho, why it sings, 931  
 the use of a marsh in, 2831  
 why it does not get red hot, 1516  
 a boiling kettle, picture, 1905  
 Kettle-holder, how to make a p m  
 kettle-holder, with picture, 1261  
 Keystone, holds an arch together, 622  
 Khabar Pass, north west of India, 116  
 its length, 3938  
 Khaki, why our soldiers wear it, 3107  
 Khartoum, Gordon's defence and his victory, 4280  
 Khedive, is the ruler of Egypt, 4238  
 Kherson near mouth of Dnieper, 3611  
 Khyber Pass, see Khabar Pass  
 Kidderminster, makes carpets, 261  
 Kidneys, purify the blood, 158, 1681  
 Kiel, headquarters of German navy  
 Kiel Canal, its position, 2750, 621  
 Kiev, in Russia, 3621  
 was destroyed by fire, 7021  
 was held by the Lithuanians, 3620  
 an old town, 3750; picture, 3714

## PICTURES OF LONDON

water that comes to London, 1677  
birdseye view, 1750  
map of part of City, 1750  
Pool of London, 2078  
Central Telegraph Office, 3523  
Mansion House Street, 4302  
monument to fire of London, 5009

## SEE ALSO NAMES OF BUILDINGS

London Bridge, first bridge, 1825  
London pride, its family, 4112  
a wild flower, 6271; picture, 4838  
Lonely old woman of Morocco, story, 158  
Long-glanded snake, its poison gland, 1378  
Long-leaved sundew see Sundew  
Long Parliament, sat for twelve years, 893  
Long-tailed bird of paradise, 1738  
Longfellow, Henry Wadsworth, life, 5087  
poems see Poetry Index  
pictures, 5083, 5086  
Longitude, what it is, 3036  
Longnor, the white lady of, legend, 431  
Longobards - see Lombards  
Longshanks, name of Edward I., 2704  
Longships lighthouse, picture, 4427  
Longstaff, John, his picture, The Last Days of Burke and Wills, 298  
Longstone lighthouse, 191, picture, 103  
Long-tailed rheumonon, picture, 3257  
Loofah, what it is, 3434  
Look that helped a fallen friend, story, 1558

Looking-glass - see Mirror  
Lord of the Lions, story, 2608  
Lord of the White Elephant, 1880  
Lord of the Yellow Land, 4036  
Lord's Prayer, 1103, in verse, 4306  
Lords, of the grey and white castles, story, with pictures, 1897  
Lords and ladies, the cuckoo-pint, 4185  
Lorenzo, the Magnificent, art patron, 2784  
made Lorenzo a centre of learning, 3156  
pictures, 585, 1400, 5025  
Loris, kind of lemur 586  
Lorraine, given up to Germany, 2277  
taken by the French, 2528  
Lorraine, Claude, story of his life, 4954  
portrait, 4945  
Lot, crossed the desert with Abraham, 471  
Lothians, districts in Scotland, 180  
Lotus, Egyptians use for decoration, 1022  
making patterns with lotus, picture, 1623  
Loudan, Moutat, his picture of Elaine, 1204  
Louis VII., of France, 1589  
Louis VIII., of France, 576  
Louis IX., of France, took part in the Crusades, 1502, 2106  
pictures, 1501, 2102  
Louis XI., of France, a good king, 2109  
at war with Charles the Bold, 3460  
visiting his peasants, picture, 2199  
Louis XII., of France, how he treated the cruel nobleman, story, 3647  
Louis XIV., of France, bought Dunkirk, 898  
went to war with England, 899, 1253  
reigned over seventy years 2200  
said the Pyrenees are no more 2390  
kept the Germans from the Rhine 2528  
wanted to reinstate James II., 2768  
Louis XV., of France, his death, 2267  
persecuted the Protestants, 2392  
Louis XVI., of France, execution, 1141, 1060  
tried to carry out reforms, 2199  
began to reign when young, 2267  
as a locksmith, 2268  
tried to escape from France, 2270  
condemned to death 2272  
a revolution against him, 1053, 4054  
among his people, picture, 2109  
portrait, 1053  
Night from Paris picture 4057  
in the Temple prison, picture, 1059  
Louis XVIII., of France, 3304  
Louisa, queen of Prussia, and the corn flower, story, 1691  
built by Napoleon, 2635  
Louisa, taken by the English, 2020  
Louisa, colonised by the French 1112  
named after Louis XIV., 2321  
sold to the United States 2022  
Lousbury, Charles, his will, 5203  
Love taught at locksmith's story, 1525  
that is stronger than death, story, 4971  
may vary - said  
Love-bird, portrait, 1747 picture, 1743  
in a mist, flower, 341

Lover, Samuel, story of his life, 3010  
wrote Rory O'More, 3743  
poem see Poetry Index  
Low Countries see Netherlands  
Low tide, how it is formed, 2281  
Lowell, James Russell, his life, 5090  
poems see Poetry Index  
portrait, 5083  
Lowell, Professor, his discoveries, 3132  
Loyola, St Ignatius de, his life, 3090  
picture, 3981  
Lubbock, Sir John see Ayebury  
Lubeck, joined Hansaatic League, 2526  
Lucas Seymour, his picture of Bibles being burnt in St Paul's Churchyard, 16  
his picture of Drake, 805  
his picture of Louis XI., 2109  
his picture of Cardinal Wolsey, 2378  
Lucca oil, use in making scent, 1505  
Lucerne, monument to the Swiss Guards, 1804, 2272, picture, 2963  
Lucerne, Lake, in Switzerland, 2060, 2064  
Lu-chu Islands, south of Japan, 4147  
Lucius, British king, 4635  
Luck, what it is, 1271  
a box of good luck, story, 2304  
Lucknow, siege, 1013, 1702  
Lucrateria, wife of a Roman noble, 390  
Ludwig I., of Bavaria, 2755  
Ludwig II., of Bavaria, 3252  
Lugworm, 2587, picture, 2589  
Luke, St., how Gospel was written, 3811  
account of Paul's voyage to Rome, 4794, 4795  
Luke, Mrs. see Poetry Index  
Lullin, Lionel, invented the lifeboat, 1429  
Lullaby, what it is, 388  
Lumber, name for timber, 1242  
Luminous things, what they are 3977, 5043  
how they differ from non luminous, 5178  
Lump fish, how many eggs it lays, 2531  
Lump-sucker, picture, 2538  
Lunatic, how we got the word, 2231  
Lung-fish, breathes by lungs, 2416  
can be brought alive from America, 2675  
picture, 2447  
Lungs, position inside chest, 1580, 1634  
purify the blood, 1583  
life and the lungs 1033  
how the lung is made, 1636  
how the air gets into our lungs, 1787  
pictures, 1633, 1636, 1637  
Lungwort, its family, 4112  
Lupercus, Roman god, 4516  
Lurch, to leave in the lurch, 3506  
Lusitania, Roman province in Spain, 3354  
Luther, Martin, loved 46th Psalm, 1591  
great hymn maker, 1998  
defied the pope, 2527, 2708  
story of the lazy monk, 3392  
and St Peter's Church, 4948  
his life, 5236  
translated the Bible, 5237  
pictures, 1994, 1090, 5235  
Luton, straw hats made in, 205  
Lutzen, battle of, 2523  
Luxor, ruins of temples, 4787  
statue of Rameses II picture, 5007  
Lyall, Edna, popular novelist 2599  
Lychnis, Alpine, what it is like, 1379  
Lycurgus, settled laws of Sparta, 5124  
Lydia, conquest by Cyrus, 5053  
Lyell, Sir Charles, great geologist, 3228  
his life, 5151, portrait, 5149  
Lynx, 30, 280, picture, 281  
Lyons, city, 2392, picture, 2397  
Lyre, musical instrument, 1015  
Lyre-bird, 1746, 2061, picture, 1743  
Lyric, what it is, 41  
what it is used for 42  
of many kinds, 195  
Lysias, rescued Paul, 4755  
Lysicrates monument at Athens, 5004  
picture, 5008  
Lysippus, great sculptor, 4160  
Lytle, Henry Francis, wrote hymns, 2000  
poems see Poetry Index  
portrait, 1999  
Lyttellon, port of New Zealand, 1458  
Lytton, Edward Bulwer, Lord, life, 2310  
portrait, 2307

## M

McAdam, John Loudon, made roads, 1438  
M Alpin, Kenneth - see Kenneth M Alpin  
Macao, settlement in China, 4039  
woman and child, picture, 1039  
Macaron, preparation of what it, 2925, 3022  
drying process, picture, 3022

Macaulay, Lord, wrote Lays of Ancient Rome, 1395  
his life, 4686, portrait, 1675  
poems see Poetry Index  
Macaulay, William, picture, 3233  
Macaw, parrot, 1747, pictures, 32, 1741  
Macbeth, usurped throne of Scotland, 3079  
Maccabaeus see Judas Maccabaeus  
Macclesfield, makes silk goods, 261  
McClure, Sir Robert, explorer, 4724  
portrait, 4725  
Macdonald, George, wrote fairy tales, 1171  
poems see Poetry Index  
Maddowell, Patrick, work on Albert Memorial, 5004  
Macedon, powerful Greek kingdom, 1301  
formed a compact against Basil II, 3154  
a province of Turkey, 3224  
conquest of Greece, 5130  
became a Roman province, 5130  
war with Rome, 5284  
shepherd, picture, 3225  
Macedonia see Macedon  
Machairodus, tiger, picture, 27  
Machinery, to be run by alcohol, 1872  
how it produces heat, 4306  
why we cannot get a perfect machine, 4308  
efficiency of see Efficiency of machinery  
machine worked by the sun, picture, 4365  
Machpelah, cave of, 473  
Mickay, Alexander, life, 3189, picture, 3183  
Mackay, Charles, song, 3740  
poems see Poetry Index  
Mackenzie, a part of New Zealand, 1455  
Mackerel, fish, 2532, picture, 2533  
Mackintosh, why it keeps us dry, 605  
McLaughlin, Margaret, how she gave up her life, 521  
MacNally, Leonard, wrote a song, 3741  
MacWhirter, John, his picture of Child Roland, 5081  
Madagascar, belongs to France, 2399, 4262  
Madonna, and Child, pictures, 1589  
Madonna Lily, 1287, 5271  
pictures, 1287, 5278  
Madras, its harbour 1548  
English factory set up, 1600  
captured by the French, 1700  
Madrid, capital of Spain, 3358, 3360  
Maecenas, patron of poets, 5218  
Maellar, Lake, in Sweden, 3600  
Maelstrom, famous whirlpool, 4743  
Magazine, how to start a school magazine, and pictures, 4767  
Magdalena, river, 4578  
Magdeburg, siege, is made there, 2750  
Magellan, Ferdinand, his discoveries, 40, 4502, portrait, 40  
Magellan Straits, why so called, 40  
their position, 4500, picture, 4499  
Magenta, battle of, picture, 3021  
Mageroe Lake, 3601  
Maggiore, Lake, its position, 2960, 3012  
Magic answers, a game 240  
Magic boy fiddler, of Sicily, story, 009  
Magic carpet, the story, and picture, 78  
Magic lantern, how the light is got, 1215  
for picture postcards, 2459  
how to make a magic lantern, and pictures, 2767  
Magic pen of truth, story, 2092  
Magic scissors, the boy conjurer's, 604  
Magic slippers, a pair of story, 2008  
Magic square, problem, 2350, 2465  
Magic string, trick, and picture, 1189  
Magic tinder-box, story and picture, 1126  
Magic tumbler, trick, 2150  
Magician, the magician's jacket, and picture, 1615  
the story of the magician's forbidden room, and pictures, 1855  
Magna Carta, 570, 2101  
Magnaesia, for cleaning teeth, 2100  
see correction on page 5296  
Magnaesia, battle of, 5204  
Magnesium, exists in the sun 2093  
Magnet, experiments with, 2119  
how the Poles attract and repel each other, 3255  
Magnetic needle, registers change of the sun's surface, 2081  
how it turns to Poles, 3253  
Magnetism, Faraday's discoveries, 2120  
electricity and magnetism, 5253  
in the earth and sun, 5254  
Magnifying glass, why it makes things look bigger and picture, 1641  
how it makes the sun burn paper, 2829

- Mason spider, the trapdoor spider, 3302  
 Mass, a Roman Catholic service, 3213  
 Mass, in weights and measures, 3671  
 difference between mass and weight, 603  
 Mass'na, Andre, Napoleon's marshal, 4362  
 Massif Central, high lands in France, 2300  
 Massinger, Philip, a poet, 1330  
 Mast, different kinds, 3913  
 some of the parts of a mast, 4566  
 picture, 4565  
 Masterman Ready, story of the book,  
 with picture, 2025  
 Mastodon, elephant, 31, pictures, 27, 3679  
 Mat, how to make a wool mat, with  
 picture, 2481  
 Mat grass, picture, 2902  
 Matabele, a people of Africa, 1766  
 Matapan, Cape, its rocks, 53  
 Match, why a match lights, 395  
 pulling one match through another,  
 trick, with picture, 562  
 why it strikes, 835  
 its history, with pictures, 836  
 why it goes out when we blow it, 1140  
 tricks to do with matches, with pictures,  
 1723, 1824, 3611  
 how it is made, with pictures, 2404  
 why it flares up when held upside  
 down, 4823  
 Matchbox, trick with, 108  
 chest of drawers, with picture, 1723  
 Matk, Paraguayan tea, 1772  
 Matlahual, of present day people, 4439  
 what it means, 4430, 1731  
 Mathematical optics, 5178  
 Matilda, see Maud  
 Matinathas, his rebellion, 901  
 Matted sea lavender, what it is like, 5185  
 Matter, made up of elements, 705  
 how it may exist, 791  
 the different kinds of matter, 794, 3941  
 how movement changes matter, 3465  
 does not disappear at absolute zero, 4049  
 movements of atoms, 4940  
 matter not found on the earth, 5023  
 how its atoms set up waves, 5043  
 a kind of electricity, 5255  
 Matter, of the body, 1102  
 Matkhoron, mountain, 2960, picture, 2958  
 Matthew, St., in Ethiopia, 2330  
 how his Gospel was written, 3811  
 what is known of him, 5183  
 pictures, 3104, 5179  
 Matthias, St., what is known of him, 5183  
 Mattheus, when sleeping out, 4032  
 Maud, wife of Henry I of England, 570  
 Maud, daughter of Henry I of England,  
 granted land to abbey at Reading, 570  
 was with Stephen, 572, 2702  
 story of her life, 1249  
 helped by David I of Scotland, 3030  
 Mauretania, ship, with picture, 2473  
 Maurice, Prince of Orange, 3462  
 Mauritius Islands, taken from France, 1876  
 Mauve, colour, discovered, 2507  
 Maximilian I., emperor of Holy Roman  
 Empire, was a Hapsburg, 2527  
 tomb in Innsbruck Cathedral, 2854  
 married duchess of Burgundy, 3460  
 Maximilian, emperor of Mexico, 4390  
 Maximinus, cruelty to St Catherine, 900  
 Maximus, Pontifex, see Pontifex Maximus  
 Maxwell, James Clerk, pressure of light  
 teaching, 1775, 5010  
 on electric waves of light, 5042  
 May, flower, a name for hawthorn, 3440  
 May, month, how it got its name, 2671,  
 4518  
 May fly, 3262, picture, 3259  
 May rose, the guelder rose, 1486  
 Mayas, an American tribe, 4384  
 Mayence, a German city, 2754  
 Mayflower, Pilgrim Fathers' voyage, 892,  
 2018  
 Maynard, John, how he steered a ship on  
 fire to safety, with picture, 7659  
 Mayweed, scentless, 1290, picture, 4288  
 Mazagan, Moroccan seaport, picture, 4255  
 Mazzini, Joseph, his work for Italy, 4841  
 portrait, 1841  
 Meadow barley, with picture, 1339  
 Meadow buttercup, 4290, picture, 1287  
 Meadow foxtail grass, picture, 2807  
 Meadow grasses, pictures, 1341, 2899  
 Meadow pink, 622, picture in colour, 1711  
 Meadow plume, fluff, picture, 1288  
 Meadow-rue, alpine, 4832  
 Meadow soft grass, picture, 1843  
 Meadow vetchling, 4292, picture, 4289  
 Meadowsweet, use as medicine, 4061  
 what it is like, 4966, picture, 4061  
 Mealy primrose, see Bird's eye primrose  
 Measure for Measure, story of play, 271  
 Measurement, of things from a distance,  
 with picture, 1108, 1407  
 how things are measured, 3669  
 size and weight of things, 3813  
 how to measure the pressure of the  
 atmosphere, 3014  
 Meat, value as food, 3213  
 Meat extract, value as food, 3119  
 Mecca, pilgrimages, 3876, picture, 3001  
 Medea, who helped Jason, 156  
 Medes, attacked Athens, 1801  
 wars with Mesopotamia, 4074  
 defeated Assyrians, 4952  
 settled in Asia, 5057  
 growth of kingdom, 5057  
 union with Persia, 5058  
 their religion, 5058  
 Medici, Catharina de, mother of three  
 kings, 2198  
 planned St Bartholomew's Day, 2200  
 Medici, Lorenzo de see Lorenzo the  
 Magnificent  
 Medici, Marie de, wife of Henry IV of  
 France, 2200  
 Medici family, their great power, 3018  
 pensioned Botticelli, 4950  
 Medicine, why it seems nasty, 3089  
 the world's great doctors, 4195  
 use of sugar in, 5115  
 Medina, pilgrimages made to, 3870  
 Mediterranean Sea, people round, 448  
 has a strong British fleet, 1875  
 Medium, what it is, 1581  
 Medusa, picture, 2331  
 Megalosaurus, a lizard that ate flesh, 29  
 Meissomer, Jean Louis, his picture of the  
 battle of Friedland, 2273  
 Melanesia, forms part of Australasia, 1160  
 Melbourne, the capital of Victoria, 1358  
 Melic, wood see Wood melic  
 Melons, 666, picture in colour, 676  
 Melville Bay, picture, 4721  
 Memory, how it may be trained, 641, 5010  
 why we cannot remember what hap-  
 pened when we were babies, 2420  
 why we forget some things, 2420  
 what it is, 4807, 1939  
 what an act of memory involves, 4808  
 when it is at its best, 4808  
 why old people remember things of long  
 ago, 4808  
 and education, 4808  
 how repetition helps it, 4809  
 how it depends on attention, 4810  
 how to think, 5025  
 association of ideas in, 5029  
 Memphis, built by Menes, 4971
- ### MEN AND WOMEN
- CHILD'S BOOK OF MEN AND WOMEN  
 The following are the actual headings  
 of the chapters in this section. The  
 separate entries appear below  
 and in their proper places in the index  
 men who made the world known, 33  
 the explorers of Africa, 141  
 the men who found Australia, 293  
 the first great men of Rome, 399  
 the emperors of Rome, 523  
 men who made the railways, 587  
 the men who gave us light, 679  
 twelve great painters, 777  
 heroes of the nations, 901  
 stories of the saints, 985  
 great builders of London, 1157  
 the queens of England, 1249  
 the great men of Greece, 1301  
 writers of the fairy books, 1467  
 the men of the Crusades, 1585  
 the men who mapped the skies, 1655  
 the great story-tellers, 1725  
 men of the great rebellion, 1887  
 the writers of the hymns, 1995  
 men who found electricity, 2113  
 early leaders of the Church, 2155  
 the great story-tellers, 2307  
 twelve British statesmen, 2379  
 conquerors of the sea, 2467  
 women story tellers, 2591  
 famous kings of England, 2701  
 the builders of Florence, 2779  
 slaves who became famous, 2909  
 some founders of religions, 2995
- Men and Women, kings and queens of  
 Scotland, 3079  
 great composers of music, 3213  
 four great English poets, 3327  
 some famous missionaries, 3483  
 men who gave us printing, 3567  
 some famous reformers, 3697  
 the writers of the songs, 3737  
 the great poets since Milton, 3903  
 some famous monks, 7981  
 the French revolutionists, 4073  
 the world's great doctors, 4195  
 makers of telegraphs and telephones, 1313  
 Nelson Wellington, Napoleon, 1355  
 the makers of Venice, 4459  
 great thinkers, 4617  
 some great English writers, 4675  
 famous modern thinkers, 4811  
 famous makers of Rome, 4935  
 famous American writers, 5083  
 famous men of science, 5149  
 writers of other lands, 5217  
 Men, the first men lived in trees and  
 caves, 31  
 the man who saved his son, story, 192  
 how man conquered the earth, 620  
 man who knew no fear, story, 811  
 drawing of man from squares, 975  
 man who disappeared, story, 1109  
 men who mapped the skies, 1655  
 when men were good, story, 2092  
 man who gave away, story, and picture,  
 2165  
 height has not changed much, 2087  
 where mankind probably first lived, 3005  
 how races are being destroyed, 3136  
 how can exist on earth, 3136  
 did not always walk, 3978  
 probably always talked, 3978  
 man who loved children, story, 1177  
 little man by the secret shore, story,  
 and picture, 4928  
 man who thought of his comrades, story,  
 4953  
 man's sociability, 5231  
 'aboriginal' man, picture, 32  
 homes of man in all ages, picture, 623  
 man with the hoe, picture, 4525  
 Menagerie race, game, with picture, 4500  
 Menai Straits, bridge, 1825  
 Mendelssohn, Felix Bartholdy, how he  
 worked as a boy, 1621  
 story of his life, 3250; portrait, 3243  
 Mending, how to make old things new, 3723  
 the right way to mend things, 4249  
 Mendoza, Antonio de, gold hunting expe-  
 dition, 4505  
 Menelaus, husband of Helen of Troy, 78,  
 539  
 Menes, king of Egypt, 4785, 4971  
 Men-kau-Ra, a king of Egypt, 4785  
 Mentone, ancient caves at, 2687  
 Merak, a star, 2612, pictures, 2611, 2613,  
 2617  
 Mercator's projection with picture, 1751  
 Merchant of Venice, The play, 88  
 Mercia, an old Saxon kingdom, 510  
 Mercury, element, denser than water, 602  
 what it is used for, 178, 1392  
 a liquid element, 1388  
 what it is, 1434  
 not attracted by a surface, 1140  
 looks like water silver, 1870  
 mixtures of mercury, 1869  
 how to tell if it is pure, 2448  
 why it does not wet our hands, 3694  
 why iron can float on it, 3737  
 its specific gravity, 3814  
 Torricelli's experiment with, 3942  
 first used in thermometers, 1371  
 will not rise in a tube, 4826  
 Mercury, messenger of the gods, 425, 1518  
 lent aid to Persius, 1049  
 Mercury and the woodman, fable, 2039  
 Mercury, planet, distance from sun, 240  
 how the planet got its name, 2241  
 what is known about it, 2423  
 with Venus, picture, 2425  
 Mercy, picture, 2201  
 Meredith, George, famous writer, 2316  
 on names, 1017  
 wrote a poem to the skylark, 5137  
 Merida, an ancient town in Spain, 3354  
 Meridians of longitude, what they are,  
 with picture, 1760, 1751  
 Marino sheep, and picture, 360, 370  
 Merlin, a bird, and picture, 1815, 1846  
 Merlin, the wizard, 161, 926

Modeltown, fire station, with pictures, 2352  
 gasworks, with pictures, 2601  
 finishing Modeltown, with pictures, 4673  
 Mosertherium's skull, picture, 3879  
 Moffatt, Robert, his life, 144, 3488, picture, 3483  
 Mogul Empire, founded by Babar, 1698  
 Moguls, emperors of India, 1112, 1702  
 conquered India, 1518, 1550  
 Great Mogul, 1698  
 Mohacs, battle, won by the Turks, 2854  
 Mohammed, wrote down his dreams, 22  
 founded Islamism, 1550, 1585, 3878  
 his life and teaching, 3002  
 his faith, 3152, portrait, 2905  
 dictating the Koran, picture, 2090  
 his birthplace, picture, 3001  
 Mohammed II, 3150, portrait, 3140  
 Mohammed IV, 3020  
 Mohammed Ali, rule in Egypt, 1258  
 Mohammedanism, what it teaches, 3002  
 caused war, 3152  
 arose in Arabia, 3874  
 religion of Central Asia, 3034  
 Mohammedans, their sacred book, 22  
 followers of Mohammed, 1550, 1585  
 invaded India, 1698  
 invaded Spain and France, 3355  
 how their conquests spread, 3876  
 conquered Persia, 3878, 5000  
 conquered Egypt, 4256  
 Mohammedan at prayers, picture, 1697  
 Mossan, Honri, has shown there is a low-temperature chemistry, 4051  
 Moisture, how to keep ground moist, 3514  
 Molars, back teeth, 2009  
 Moldavia, an independent kingdom, 3150  
 under Russian and Turkish rule, 3158  
 part of Roumania, 3220  
 Mole, its home, with picture, 725, 726  
 Mole cricket, picture in colour, face 3111  
 Molecules, what they are, 1030, 1660, 4363  
 Moliere, Jean P. de, life and writings, 5220  
 dining with Louis XIV, picture, 5216  
 Molinia, purple, with picture, 1342  
 Mollusc, a soft-bodied animal, 2583  
 two famous molluscs, 2587  
 picture, 2589  
 Moloch, a heathen god, 2305  
 Moloch, lizard with picture, 1220, 1228  
 Moltke, General, defeated Austrians, 2639  
 at Versailles, picture, 2041  
 Mombasa, railway to Uganda, 4200  
 Monpeasson, William and Catherine, fought the Plague, 81  
 Mona, and the forsaken merman, story, with picture, 74, 75  
 Mona Lisa, picture, 1380  
 Monals, pheasants, 1515  
 Monasteries, destroyed, 800  
 Monck, General, soldier of the Commonwealth, 807  
 fought against the Dutch, 3403  
 Monday, how it got its name, 2670, 4131  
 Money, what it is, 595  
 how it is made, with pictures, 596  
 magic money, a trick, 974  
 how the conjurer makes his money, 1508  
 things of no value used as money, 4340  
 Mongolia, where it is, 3932  
 history, 3933  
 province of China, 4015, map, 3933  
 Mongolian Plateau, 3932  
 Mongolia, invaded Russia, 3621  
 invaded with West Asia, 3738  
 history, 3933  
 driven out of China, 4042  
 invaded Japan, 4113  
 Mongol gentleman, picture, 3939  
 Monrose, with picture, 283, 286  
 Monitor, lizard, 1218, picture, 1225  
 Monk, George: see Monck, General  
 Monkeys, are sacred in India, 593, 594  
 different kinds, 584  
 the sounds they make, 1250  
 prove the existence of a continent, 3005  
 help in the study of disease, 3137  
 its love for its young, 3134  
 picture, 12, 583  
 MONKEYS AND MONKEYS AND MONKEYS  
 Monkey-nut, or pea-nut, 1503  
 Monkey's Face, rock, with picture, 1053  
 Monks, trained burglars, story, 1651  
 who were famous, 1201  
 Monks, 1271, picture, 1278  
 Mono-rail system, how it works, 4901  
 apparatus, picture, 4900, 4902  
 107 tons and how, picture, 1301

Mono-rail, Brussels railway, picture, 4903  
 Kearney system, picture, 4903  
 Wupper Valley railway, picture, 4903  
 Monsal Dale, picture, 464  
 Monserrat, limes grown at, 1877  
 Monsoons, Indian winds, 1548  
 monsters, how we find remains, 26, 29  
 lived in Britain long ago, 30  
 grant monsters of the past, picture, 31  
 giant monsters of the sea, picture, 1083  
 Mont Blanc see Blanc, Mont  
 Mont Genis, see Genis, Mont  
 Mont Pelé, see Pelé, Mont  
 Montaigne, Michel Eyquem de, life and writings, 5220, portrait, 5217  
 Montana, in Ohio, 148  
 Montbretia, plant, picture, 5280  
 Montcalm, defeated by Wolfe, 1008  
 killed at Quebec, 1248  
 Monte Cristo, Count of, story of the book, 4325, 4407  
 Monte Cristo's Island, off Marseilles, 2397  
 Monte Rosa see Rosa, Monte  
 Montague, Lord, and Gunpowder Plot, 1792  
 Montenegro, history, 3224  
 flag, picture in colour, 1011  
 national costume, picture, 3225  
 Montevideo, picture, 4577  
 Montezuma, emperor of Mexico, 4382, 4383  
 Montfort, John de, story of his wife, 2478  
 Montfort, Simon de, led barons, 578  
 founded House of Commons, 2197  
 Montgomery, James see Poetry Index  
 Months, getting longer, 1878, 2281  
 how they are made, 2220  
 how they got their names, 2670, 4515  
 Monthony, Baron de, lawyer, 1051  
 Montreal, Liverpool of Canada, 1240  
 how it was founded, 1216  
 how it was saved from the Indians, 1247  
 Montrose, Marquis of, fought for Charles I, 1800, portrait, 1896  
 Monument, The, in London, 187  
 Monuments, with pictures on them, 22  
 a talk about them, 5003  
 Moody, Dwight Lyman, story of his work, with picture, 1908, 1909  
 Moon, a dead planet, 17, 147  
 its eclipse, 170, 1882, 3431  
 circles round the earth, 237  
 there are many moons, 237  
 how it was formed, 397  
 makes the tides, 347, 1675, 2280  
 has no inhabitants, 938  
 size compared to our earth, 1367  
 pulls the earth, 1676  
 rate of travel, 1676  
 distance from the earth, 1670  
 hides the sun, 2088  
 lamp of night, 2219  
 its path, 2219  
 called Luna by the ancients, 2234  
 may have tides itself, 2280  
 spins upon itself, 2281  
 getting farther away from earth, 2281  
 its other side, 2282  
 why it appears to travel with us, 2686  
 what its marks are, 3031  
 affects rivers, 3091  
 is quite dry, 3172  
 heat inside, 3237  
 harmless to us in our sleep, 3380  
 where its atmosphere has gone, 3690  
 why it grows brighter as sun sets, 3690  
 why we can see its whole circle when it is not shining, 4116  
 map in the moon, legend, 4277  
 changes of temperature, 4321  
 will probably return to the earth, 4340  
 what the earth would look like from the moon, 4743  
 PICTURES OF MOON  
 circles round the earth, 237  
 moons Galileo saw, 247  
 with the earth in space, 239  
 blotting out the sun, 1862  
 eclipse, 1865  
 looking at it through a telescope, 2221  
 picture-map of the moon, 2222  
 moon's surface, 2223  
 volcano called Plato, 2223  
 Moor fowl: see Water hen  
 Moore, Sir John, great soldier, 643, 3362  
 Moore, Tom, wrote Irish songs, 2742  
 poems see Poetry Index  
 portrait, 7737  
 Moor-bent: see Water-hen  
 Mooring of a ship, 4585

Moors, invaded Spain and France, 2191, 3357, 3358  
 invaded Italy, 3011  
 surrendering Granada, picture, 3357  
 Moravia, river, in Serbia, 3222  
 Moravia, wool manufacture, 2358  
 Moravian missionaries, 3483  
 Moray Firth, fertile country round it, 180  
 Mordant, Sir Charles, saw eagles attack deer, 1842  
 Mordcau, Queen Esther's cousin, 246  
 how he rose to power, 2547  
 refuses to honour Haman, picture, 2549  
 Mordella beetle, its wonderful eye, 3200  
 More, Sir Thomas, statesman, 800  
 his daughter's love for him, story, with picture, 1208, 1209  
 friendship with Erasmus, 3136  
 died for his religion, 5087, 5230  
 condemned to death, picture, 5069  
 Morea, The, part of Greece, 3150  
 French troops landed, 3220  
 Moreau, J. Victor, general, routed the Austrians, 1015  
 won battle of Hohenlinden, 4380  
 Morella, named after Morelos, 1388  
 Morelos, rebelled against Spaniards, 4387  
 Morgan, Mrs., helped the earl of Nithsdale to escape, 2203  
 Morgarten, battle of, 2086  
 Morley, Lord, on Rousseau, 4841  
 Morning Post office, London, picture, 625  
 Morelos, lonely old woman, story, 158  
 its unsettled state, 4261  
 flag of Morocco, picture in colour, 1614  
 Morris dances, with pictures, 2009  
 Morris, William, taught men to strive for beauty, 3704  
 poems see Poetry Index  
 Morrison, Charles, his ideas about the telegraph, 4314  
 Morrison, Robert, life, 3486, portrait 4183  
 Morse, Samuel, what he did for telegraphy, 2474, 3416  
 pictures, 2467, 4315  
 Morse code, what it is, with picture, 3515, 3521  
 Mortar, how it is made, 381  
 holds bricks together, 619  
 Mosaic work, Roman factory, 1990  
 how it is done, 1090  
 came into use, 4585  
 picture and chapel in mosaic, pictures, 1990  
 Moschatel, flower, 4192, picture, 4186  
 Moscow, how the French reached Moscow, story, with picture, 825  
 how Napoleon marched to Moscow, 2270  
 burnt by the Tartars, 3626  
 invaded by the Poles, 3623  
 plague outbreak, 3631  
 burnt by the Russians, 3632  
 what it is like, 3748  
 picture, 3744  
 Moses, led the Israelites into the Promised Land, 122, 1023, 1733  
 story of his childhood, 911  
 fled from Egypt, 912  
 returned to Egypt, 913  
 his death, 1023  
 a slave from his birth, 2910  
 as a doctor, 1195  
 statue by Michael Angelo, with picture, 4952, 4947  
 the wise ruler, picture, 122  
 in the bulrushes, picture, 911  
 watching the battle with the Amalekites, picture, 1022  
 Moses, river, in Russia, 3748  
 Moslems, Mohammedans, 1685, 3001  
 Mosquito, how it causes fever and malaria, 179, 1380, 1789  
 the harm it does, 3145  
 its life story, 1440, picture, 3143  
 Moss campion, 4879, picture, 4875  
 Moss insect looks like a twig, 4415  
 Mossy sailfrage, picture, 1634  
 Moth, what the use of a moth is, 175  
 why it flies round a candle, 1850  
 various kinds, 2247  
 how to tell a moth, 2285  
 kept away by camphor, 4121  
 fed, through microscope, picture, 2247  
 feeder, through microscope, picture, 2243  
 British species, picture in colour, face 2283  
 hiding from foes, picture, 4411  
 SEE ALSO NAMES OF MONKS



how a nightingale helped a knight to  
-escape, story, 2745

1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 26

5228

Orange Free State, 1769, 1770  
 Orange River Colony, 1768  
 Orange-hip butterfly, picture in colour, face 2983  
 Oranges and lemons, game, 4111, 5106  
 Orchestra, its found ways, 4758  
 Orchid, how the orchid grows, 4290  
 orchids that grow in woods, 4495  
 some wild orchids, 4011, 4703  
 of the boglands, 5038  
 pictures, 4611, 4709  
 Ore Mountains, in Germany, 2752  
 Organic chemistry, see Chemistry  
 O'Reilly, John, see Poetry Index  
 Orellana, Francisco, explorer, 1603  
 Orenburg, on Ural river, 3753  
 Organ, how the sound is made, 3056  
 Orient Express, 3221  
 Oriental hyacinth, 5272  
 Origin of Species, by Darwin, 2889  
 Orinoco, river, 4108, 4573  
 Oriole, like a frill-bird, 3415  
 Orion, constellation, 1918, 2614, 2860  
 legend of Orion, 5313  
 pictures, 1949, 2617  
 Orkney Islands, north of Scotland, 190  
 Orleans, town of France, 2399  
 Orleans, Maid of see Joan of Arc  
 Ormuz, city that Marco Polo visited, 30  
 Portuguese driven from Ormuz, 3880  
 Ormuzd, god of the Zoroastrians, 3000, 5058  
 Orosius, Earlian king, 5065  
 Orpine, a sedum, 5271  
 Orr, Helen, portrait, 3031  
 Orthoptera, order of insects, 3111  
 Ortolan, eaten as a dainty, 2057  
 Osaka, beautiful temple, 1150  
 Osborne Naval College, 3233  
 O'Shaughnessy, Arthur, see Poetry Index  
 Osiers, used to make baskets, 253  
 Oslo, old town of Norway, 3602  
 Osman, leader of the Ottoman Turks, 3878  
 Osmanti, see Turks  
 Osprey, bird, 1843, picture, 1838  
 Ostend, picture, 3454  
 Ostrich, bird that cannot fly, 29  
 what kind of bird it is, 1426  
 ostrich farms in Africa, 1766  
 pictures, 32, 1229  
 Otago, province of New Zealand, 1458  
 Othello, story of play, and picture, 117  
 Othman, third caliph, 3876  
 Otho, overthrew Galba, 527  
 Ottawa, capital of Canada, 1242  
 Otter, catches fish, 280  
 how it is hunted, and picture, 2729  
 Ottoman Turks see Turks  
 Otumba, battle of, and picture, 1385  
 Oudenarde, battle of, 2500  
 Our Mutual Friend, story of novel, 2436  
 Outer Hebrides, north of Scotland, 190  
 Outlines, game, and picture, 5113  
 Outram, relieved Lucknow, 1702  
 Oval ring law, game, 5100  
 Overhand knot, 765  
 Overstrung, in piano, 4914  
 Overtones, in sound, 2620, 4864, 1913  
 Ovoid moulding, what it means, 1316  
 Owen, Sir Richard, English naturalist, 582  
 his life, 5152, portrait, 5149  
 with skeleton of dinosaurs, picture, 5151  
 Owen, Robert, work as a reformer 3702  
 Owl, what kind of bird it is, 1848  
 why it comes out only at night, 1867  
 pictures, 32, 1847  
 Owl moth, 2994  
 Owl parrot, 1430, picture, 1431  
 Ox-bow, insect, 3262, picture, 3257  
 Ox-eye daisy, 4112, 4390, picture, 4288  
 Oxidation, what it is, 1215, 3236  
 Oxide of calcium, what it is, 5437  
 Oxide of iron, what it is, 1776  
 Oxide of lead, its use, 2147  
 Oxide of potassium, effect of water, 1800  
 Oxide of sodium, effect of water, 1800  
 Oxide of sulphur, how it is made up, 1888  
 Oxley, Lieutenant, explored Australia, 206  
 Ozis, river, 3938  
 Oxygen, living creatures require, 247, 957  
 in the air, 363, 1136  
 how it gets to the bottom of the sea, 548  
 helps to make us warm, 616  
 an element, 956  
 in water, 1040, 1797, 1868  
 what kind of element oxygen is, 1215  
 most important gas in the blood, 146  
 forms compounds with nitrogen, 1666  
 contained in most acids, 1798

Oxygen given out by plants, 2077, 1718  
 not necessary in the sun, 5131  
 its specific gravity, 3616  
 pure oxygen does not kill us, 1117  
 taken in by rocks, 4545  
 Oxyhaemoglobin, what it is, 1357  
 Oyster, not a fish, 729  
 how an oyster makes a pearl, 529  
 attaches itself to rock, 2588  
 how oysters are cultivated and gathered, with pictures, 3771, 3773, 3774  
 lawer and the oyster, story, 1938  
 pictures, 32, 2589  
 pearl in the oyster, picture, 870  
 Oyster-catcher, a bird, 1852, 2590  
 picture, 1959  
 Ozone, variety of oxygen, 1859

## P

P M what it means, 1542  
 Pacific Ocean, how it was discovered, 10  
 is the deepest ocean, 1400  
 Paddington Station, 70, 155  
 Pagan, how its meaning has changed, 269  
 names derived from pig in, 2968  
 Page, C G, and the electro-magnet, 1117  
 Page, Theodore, portrait, 3031  
 Pagodas, are temples, 1880  
 Pain, special nerves of pain sense, 1064  
 what we know about it, 3032  
 avoidance by numbing nerves, 4511  
 animals' feeling, 4593  
 Paint, how to clean, 4456  
 Paint brushes, how to clean, 4456  
 Painted lady, butterfly, 2902  
 picture in colour, face 2903  
 Painters, twelve great painters, 777  
 Painting, how to paint 101, 1811  
 a spray of leaves, 652  
 colours, and how to use them, 1175, 1810  
 drawing and painting a daisy, 1291  
 how to put on a graduated wash, with picture, 1502  
 with stencils, 1921  
 animal drawing with the brush, 2205  
 a green leaf, and its shadow, picture, 1810  
 an open book painted on a green back ground, picture, 1811  
 Paisley, its industries, 284, 266  
 Palaeomastodon, skull, picture, 3079  
 Palaeontology, what it is, 5150  
 Palafox, José, defended Saragossa, 4615  
 Palamides, Sir, overcame by Tristram, 3212  
 Palatine Hill, founded by Romulus, 5200  
 Pale, in the flower of grass, 1332  
 Palestine, pilgrimages to, 1385, 3874  
 conquered by Scladin, 1589  
 now largely a desert, 3133  
 Palestro, Giovanni Pierluigi da, wrote a mass, 3243, portrait, 3213  
 Palestro, battle of with picture, 3021  
 Palissy, Bernard, life, 4558, picture, 1559  
 Palladio, Andrea, his life, 1404  
 Palmer, British midshipman how he saved his companions, story, 1178  
 Palmer, John, started mail coaches, 1180  
 Palmerston, Henry John, Viscount, a liberal prime minister, 2386  
 pictures, 2379, 2383  
 Palmyra, city in Tennessee, 1176  
 Pamir Plateau, in Central Asia, 3931  
 Pampas plains of South America, 3135, 4500  
 Pampas grass, 1501  
 Pan, a Greek god, 2670  
 Panama, republic 4392  
 flag, picture in colour, 1643  
 Panama Canal its construction, 4392, 1580  
 pictures, 4387, 4389  
 Panama, Isthmus of, where it is, 4381  
 Pancreas, how it digests fats, 2516  
 Panda, a Lulu king, 1769  
 Panch, in carpentry, 1510  
 in sculpture, 4159  
 Panchola, animal, 1002, picture, 1001  
 Pansy, how to plant, 116  
 story about the pansy, 493  
 likes moisture, 867  
 when to sow seed 1188  
 its cultivation, 5271  
 wild pansy see Heartsease  
 pictures, 417, 4833, 1835  
 Pantheon, picture, 5267  
 Paoli, Pasquale de, picture, 4843  
 Papal States, governed by the popes, 3014  
 Paper, what to use for drawing, 99  
 how to make do with, with picture, 113

Paper, what it is made from, 175, 270,  
 how to make a box, with picture, 332  
 how to boil water in, with picture, 455  
 how it is made, with pictures, 871  
 what to do with a piece of paper, 1925  
 how to make a long chain from a piece of paper, with picture, 2218, 3518  
 how to make from rice, discovery, 2527  
 why it makes it curl up, 3379  
 how to make paper flowers, 1140  
 things to make with folded paper, with picture, 4770  
 through the microscope, picture, 2325  
 Papius, Denis, and steam navigation, 2463  
 Pappus, of a dandelion, 1286  
 Pappus bower bird, 1745  
 Papyrus, Bible written on it, 13  
 used by Egyptians as paper, 23  
 the earliest writings, 3371  
 Egyptian papyrus deciphered, 4782  
 how Egyptians wrote on it, picture, 23  
 papyrus plant, picture, 21  
 Para, a port of Brazil, 4505, 4571  
 Parable, what the word means, 2774  
 Parachute, how to make of paper, with picture, 1925  
 Paradise, bird of see Bird of paradise  
 Paradise-fish, with picture, 2681, 2683  
 Paraffin, how it is obtained, 2109  
 what it is, 4111  
 Paraguay, a state of South America, 4502, 1572, flag, picture in colour, 1644  
 Paraguay, river, 4572  
 Parakeet, an Australian bird, 1747  
 Paraldehyde, makes people sleep, 1873  
 Parallels of latitude, how they are drawn, with picture, 1750, 1751  
 Parana, river, flows into river Plate, 4572  
 Parasite, lives on other animals, 3115, 1830, 1814  
 Parasitic plants, 3830, 5103  
 Parchment, how it got its name, 2670  
 was used for writing on, 3371  
 Pardon's Tale in The Canterbury Tales, 640  
 Paris, Ambroise, his life, 4108  
 Parelle, Jeanne, the devoted daughter, 302  
 Parental instinct, 5143  
 Parme Mountains, 4578  
 Paris, stole Helen of Troy, 78, 639  
 Paris, girl who saved Paris, story, 2317  
 Versailles, men march to Paris, 2272  
 was besieged by the Germans, 2377, 2640  
 description of the city 2395  
 Vendome Column and Arc de Triomphe, 5005  
 Place de la Concorde, picture, 2380  
 Opera House, picture, 2494  
 general view of the city, picture, 2393  
 Arc de Triomphe, picture, 5012  
 Park, Mungo, explorer, 144, portrait, 145  
 Parker, Samuel, bishop, 4567  
 Parker, Sybil C, her picture of Jesus, 3900  
 Parkside Station, picture, 591  
 Parliament, British founded, 578  
 its power established, 899  
 union of the English and Scottish parliaments, 899, 1257  
 union of Irish and British, 1010  
 more people could vote, 1014  
 Simon de Montfort founded, 2197  
 what the word means, 2771, 3780  
 sent message to Turkish Parliament, 3226  
 scenes in, picture, 2383  
 Parliament, Houses of, how they were built, 1164, picture, 1165  
 Parthianus, a Greek painter, 4583  
 Parrot, why it can talk, 1269  
 different species, 1747  
 how long it lives, 2328  
 the cat and the parrot, story, 2494  
 do not know what they are talking about, 3234  
 meeting of parrots, picture, 1739  
 different kinds pictures, 1743  
 Parrot-wrasse fish, 2540, picture, 2539  
 Parry, Sir William, an explorer, 4724  
 portrait, 4725  
 Parsees, who they are, 3878  
 Parsley, plant, how to grow, 3071  
 Parsley, family of plants, 4112  
 Parsnip, its family, 1112  
 Parsons, Hon Charles A, made the steam-turbine, 2474, portrait, 2467  
 Parthenon, Greek temple, 622, 3220  
 how to make with reeds, and picture, 4352  
 its building and sculptures, 5128  
 pictures, 4104, 5125



## Peru

## GENERAL INDEX

Pla

- Peru, flag, picture in colour, 1614  
 Pestalozzi, John, his work for children, 2968, 4177, picture, 1177  
 Petals of flower, picture, 3738  
 Petard, hoist with his own, 3500  
 Peter, names from Peter, 2868  
 robbing Peter to pay Paul, 3500  
 meaning of name, 5250  
 Peter, St., may have visited Rome, 2330  
 becomes a disciple, 2956  
 denial of Jesus, 3321, 3424  
 went to Jesus' empty tomb, 3337  
 meeting with St. Paul, 4531  
 stay with Simon the tanner, 1534  
 his intimacy with Jesus, 5091  
 what is known of him, 5180  
 pictures, 1425, 3383, 5181  
 portrait, 5179  
 Peter the Great, of Russia, his life, 3623  
 memorials in St. Petersburg, 3746, 3748  
 interest in Archangel, 3753  
 scenes from life, pictures, 3027  
 Peter III, of Russia, 3630  
 Peter the Hermit, 1491, 1586  
 Peter Martyr, what he said of Isabella of Castile, 2113  
 Peter of Moron, a hermit who became pope, and picture, 423  
 see correction on page 5296  
 Peter Pan, written by J. M. Barrie, 1474  
 story of Peter Pan, and pictures, 2843  
 see correction on page 5296  
 Peter Simple, the story of the book, 2028  
 Peterborough, agricultural tools, 265  
 Petition of Right, signed, 1897, 1892  
 Petrarch, an Italian poet, 3328  
 life, 5219, portrait, 5217  
 Petrel, different kinds, 1026, pictures, 1827  
 Petrifying, of wood, 5230  
 petrified forest, picture, 3131  
 Petrol, contains hydrogen, 1107  
 is burned in motors, 1771  
 means rock oil, 3238  
 its specific gravity, 3816  
 cleans materials, 4456  
 Petroleum see Petrol  
 Petrous bone, is part of the skull, 2542  
 Petto, John, his pictures, 3323, 1490  
 Petty-whin, a name for needle furze, 4614  
 Pewter, formed of tin and lead, 1870  
 Phagocytes, what they are, and picture, 818  
 Phalarax, flying see Flying phalanger  
 Pharaoh, title of the rulers of Egypt, 1747  
 Pharaoh, king of Egypt, dream explained by Joseph, 808  
 made the Israelites slaves, 911  
 death of his first-born, picture, 910  
 on his way to temple of Ammon, picture, 4781  
 Pharaoh's chicken, the vulture, 1844  
 Pharisae, and the publican, parable, 3901  
 and Jesus' teaching, 3106  
 Pharsalia, battle of, 106, 5206  
 Pheasant, its life-story, 1514  
 the different kinds of pheasants, 1515  
 how long it lives, 2028  
 pictures 32, 1516  
 Pheasant's-eye narcissus, 6272  
 Phelippides, how he ran from Marathon to Athens, with picture, 1803  
 Phidias, a great sculptor, 622, 1302  
 decorated the Parthenon, 4160  
 made the statue of Athena, 5125  
 helped with Acropolis buildings, 5128  
 Phidiasia, fiesta, picture, 4159  
 Philadelphia, meaning of name, 2018  
 largest coat market in the world, 2066  
 Philae, island of, its temples, 1790  
 Philatelist, stamp collector, 5239  
 Philip, names derived from, 2363  
 Philip, apostle, what we know of him, 5192  
 portrait, 5179  
 Philip, duke of Burgundy, 3160  
 Philip, king of Macedonia, 1304, 5130  
 Philip, prince of Orleans, 4060  
 Philip I., king of Spain, 3227  
 Philip II., king of Spain husband of Mary I. of England, 801, 1231  
 wished to marry Queen Elizabeth 804  
 ruled over the Netherlands, 903, 3351  
 sent the Armada against England, 1252  
 made himself king of Portugal, 1266  
 his reign, 3458  
 treated the Netherlands cruelly, 3460  
 seized Brazil, 4598; pictures, 3353, 3363  
 Philip Augustus, king of France, took part in the Third Crusade, 1589  
 had to obey Innocent III., 2104  
 conquered Normandy, 2107  
 Philpburgh, battle of, 1806  
 Philippa of Gaunt, 3356  
 Philippa of Hainault, wife of Edward III., saved the citizens of Calais, 747, 1250  
 Philippa de Rouet, Chaucer's wife, 3328  
 Philippi, battle of, 5218  
 Philipines, what they are, 1304  
 Philippine Islands, passed to the United States, 3362  
 grow tobacco, sugar, and rice, 2070  
 Philistia, land of the Philistines, 1259  
 Philistines, enemies of Israelites, 1096, 1259  
 Philology, see Language, Reading, Words, etc.  
 Philopœmen, a famous Greek, 1308  
 Philosopher's stone, search for, 1490  
 Phinehas, led the Israelites 1029  
 Phlox, plant, 446, 867  
 Phoebus Apollo, the sun god, 4131  
 Phœnicians, were great explorers, 37, 141  
 defeated by Greeks, 1306, 5129  
 rise to power, 5122  
 bartering with the Britons, picture in colour, face 345  
 Phœnician wars see Punic wars  
 Phoenix, a golden pheasant, 1515  
 Pholas, what it is, and picture, 2587, 2589  
 Phonograph, repeats what is said into it, 1200  
 invented by Edison, 3091  
 way of studying sound waves, 4917  
 effect of trumpet, 5021  
 Phosphorescence, what it is, 3694  
 Phosphoric acid, 1793  
 Phosphorus, an element, 835, 1392  
 often poisons people, 838  
 Photography, how a camera takes a picture, 1680  
 what a photograph is, 1680  
 why developed in a red light, 1993  
 how to photograph without a camera, with pictures, 2659  
 what the word means, 2774, 1548  
 photography on a table, 4665  
 how to take faded photographs, 4600  
 how the camera takes a photograph, pictures, 1683  
 photographs taken on a table, pictures, 4664  
 Phrases, the meanings of phrases, 3505  
 foreign words and phrases, 3707  
 Phenology, why it cannot tell about the character, 2544  
 why it cannot tell about the brain, 3714  
 its use, 4444  
 Physics, what it means, 3344, 3465  
 Piano, home of fairies and goblins of music, 97  
 how it plays, 506  
 how we got the piano, 1015  
 how to sit at the piano, 1601  
 tuning of pianos, 1914  
 good and bad pianos, 4914  
 what over-strung means, 4914  
 experiment with bell notes, 4915  
 why things jingle when we play, 4915  
 the keyboard, pictures, 97, 1713  
 how it is made, pictures, 1016  
 how we should play, picture, 1501  
 Picard, Jean, discovery of size of earth, 1661  
 Picardy fisher girl, picture, 2395  
 Picking plums, game, 5106  
 Pickwick Papers, The, story of the book, with picture, 2431  
 Picnic, preparing a lunch-basket, 3615  
 picture, 3615  
 Picts, in Britain, 352  
 Picture of a golden dead the story, 3790  
 Picture frames, how to make, with pictures, 1924, 2463, 4031  
 Picture puzzles, 977, 1079, 1180, 1231, 1716, 1824, 2872, 2970, 3173, 3282, 3285, 4391, 3100, 3510, 3518, 3616, 4766, 4890, 4990, 5114  
 Picture walking: see Hieroglyphics  
 Pictures, built up from squares, 975  
 why some faces in pictures seem to follow us, 1866  
 a little talk about pictures, 4585  
 drawn with wrong perspective 1881  
 distance in a picture, 4905  
 see also UNDER SCRIPT OF PICTURES  
 Piddock, a name for the pholas, 2587  
 Pied flycatcher, lives on flies, 2318  
 Piedmont, a province of Italy, 5012, 5013  
 Pig, different kinds, 376, pictures, 557  
 how to make a stuffed pig, 657  
 eats snakes, 1380  
 how long it lives, 2328  
 how the word is derived, 3200  
 three little pigs, story, with pictures, 416  
 Pigalle, Jean Baptiste, a sculptor, 416  
 Pigeon, how it finds its way, 1371  
 different kinds, 2214, pictures, 2214  
 how long it lives, 3328  
 the pigeon and the magpie, legend, 2707  
 how the pigeons were divided, 2707  
 with picture, 5159  
 Pigment, colouring matter in the skin, 1437, 2415, 4215  
 causes chameleon's change of colour, 2121  
 Pigtail, origin of, 4946  
 Pike, its life story, 2680, pictures, 2676  
 Pilate, Pontius, see Pontius Pilate  
 Pilatus, Mount, hotel at the top of, 2060  
 picture, 2535  
 Pilchard, what sort of fish it is, 2536  
 Pilcrow, name for lesser celandine, 4188  
 Pilgrim Fathers, how they sailed to America, 892, 2016, picture, 2017  
 Pilgrim's Progress, written by Bunyan, 892  
 story of, with pictures, 1027, 1153  
 written in fine language, 2330  
 Pilgrimages, to holy places, 1585  
 to Mecca and Medina, 3876  
 Pill millipedes, 3298, picture, 3297  
 Pillar-box, posting and clearing letters, pictures, 478  
 Pillars of Hercules, 3453  
 Pillars of Solomon, trick, and picture, 2976  
 Pilon, German, a sculptor, 4162  
 Pilot fish, 2537, picture, 2538  
 Piloty, Karl von, his picture, Last of the Girondists, 4059  
 Pimpernel, closes its flower early, 3050  
 what it is like, 4424  
 Pin, how pins are made with pictures, 176  
 how to support a plate on a pin, 2248  
 why it gets hot if rubbed, 3094  
 why we hear the scratching of a pin at the other end of a pole, 3387  
 point, under microscope, picture, 2825  
 Pin-cushion, how to make, and picture, 2877, 2878  
 Pindus Mountains, 3149  
 Pine, how a pine forest is carpeted, 3031  
 pine cone decoration, picture, 4349  
 Pine martin, 280; pictures, 32, 285  
 Pineapple, where it grows, 666, 671  
 gathering pineapples, picture, in colour, 671  
 Pink, how to make pinks, 1071  
 keeps green in winter, 1610  
 related to carnation, 5270  
 picture, 5270  
 Pins and needles, its cause, 2418  
 Pipe fish, 2540, pictures, 2539  
 Pipes, how they carry water, with pictures, 2105  
 Pirates, on coast of Africa, 1260  
 Pisa Cathedral, Leaning Tower at, 289, 3018  
 Leaning Tower, picture in colour, 288  
 Pisano, Andrea, a sculptor, 4161, 494  
 Pisano, Niccolò an Italian sculptor, 4161  
 Pistil, of a flower, 7736, picture, 4110  
 Pit-viper, a family of snakes, 1350  
 Pitch, natural lake in Greenland, 1878  
 Pitchstone, game, 5106  
 Pitchstone, what it is like, 5193  
 Pith sailor, how to make, with picture, 3070  
 Pitt, earl of Chatham see Chatham  
 Pitt, William, the Younger, Act of Union passed by, 1610  
 statue in Westminster Abbey, 1014  
 story of him as a statesman, 2364  
 pictures, 2479, 3705  
 Pittsburgh, a town of America, 2066  
 Pizarro, Francisco, conquest of Incas, 4502  
 assassination, 4504  
 founded Lima, 4578, pictures, 1561  
 Plague, how it came to Lyam, 81  
 Black Death in England, 748  
 Great Plague of London, 998, 1160  
 how it affected places long ago, 1189  
 Black Death in Norway, 1594  
 outbreak in Moscow, 3631  
 picture, 3631

- Pope, Alexander, a famous writer, 1257  
 what he said of Nature, 3240  
 his life, 3904, portrait, 3907  
 Popgun, what it is, 2227  
 how to make from elder, with picture, 3070  
 how to make from quill, with picture, 4890  
 Poplar, tree, 4483, pictures, 3196  
 Popocatepetl, 4386, picture, 4381  
 Poppa Sabina, Nero's wife, 526  
 Poppy, an annual, 331  
 must not be transplanted, 3288  
 the poppy family, 4110  
 what it is like, 4417  
 picture, 4416  
 Poppy anemones, 5270  
 Population, its increase, 4907  
 SEE ALSO UNDER VARIOUS COUNTRIES  
 Porcupine, what kind of animal it is, 721  
 pictures, 32, 723  
 Porcupine grass, name for spinifex, 1364  
 Porpoise, what kind of animal it is, 1088  
 Porosna, king of the Etruscans, 3884  
 Port Arthur, in China, 3753  
 Port Arthur, town on Lake Superior, 1240  
 Port Darwin, town of South Australia, 1360  
 Port Glasgow, has large docks, 267  
 see correction on page 5296  
 Port Jackson, convict settlement, 1356  
 Port Philip, a town in Victoria, 1758  
 Portians, John, hanged by a mob, 1759  
 Porter, Anna Maria, wrote novels, 2505  
 Porter, Jane, novelist, 2504, portrait, 2503  
 Porter, John, read Bible in St Paul's, 16  
 Portnaun, Beatrice de, Dante's love for, 5219  
 Portland Harbour, picture, 4434  
 Porto Novo, king presiding over council, picture, 4201  
 Porto Rico, West Indian Island 1877 2070  
 Portsmouth, builds warships, 265, 267  
 harbour, picture, 4434  
 Portugal and Portuguese, Columbus and the king, 37  
 trade with India, 1606  
 French driven from Portugal, 2276  
 history and geography, 3353  
 explorers, 3356  
 Portuguese driven from Ormuz, 3880  
 Portuguese in China, 4042  
 route to Japan discovered, 4150  
 African possessions, 4282  
 connection with Brazil, 4506, 4572  
 Portuguese East Africa, native village, picture, 4259  
 Portuguese man-of-war, sea nettle, 2311  
 picture, 2337  
 Porus, king of India, 1306, 1696  
 Positive electricity, what it is, 2115  
 Positivism, a religion, 5249  
 Postage, how our letters come to us, with pictures, 378  
 why letters have to be stamped, 4116  
 Postcard, how to pass through a postcard, with picture, 3518  
 Posting, game, 4027  
 Posture, game, 1076  
 Pot-pourri, how to prepare, with picture, 1722  
 Potash, what it is, 2506  
 Potassium, its specific gravity, 3816  
 Potassium chloride, how to form, 1801  
 Potassium sulphate, what it is, 1801  
 Potato, contains much water, 1172  
 used for making alcohol, 1872  
 how to grow, 3071, 3514  
 how to dig up, 3826  
 why it does not rot, 4110  
 how to store, 4353  
 Potato spirit, causes death of African natives, 4372  
 Potato woman and her pig, how to make, with picture, 671  
 Potential energy, what it is, 7552  
 Poliphar, Joseph's master, 807, 2910  
 Potomac, silver mines, 4504, 4576  
 Potsdam, city in Prussia, 2748  
 Potter, how he works, with pictures, 4177  
 Potteries, district in England, 287  
 Pottery, made by the Greeks, 5129  
 Potts, Doris, picture, 3089  
 Poultry-keeping, as a hobby, 4671  
 Pounds, John, how he taught poor children, with picture, 3790  
 Pouter pigeon, 2213, picture, 2213  
 Powell-Cotton, Major, hunt for cheah, 1000  
 Poynter, Sir Edward, his picture, Faithful unto Death, 80  
 his picture of Solomon, 1673  
 his painting of Israel in slavery, 1733  
 Prague, capital of Bohemia, 2616, 2858  
 Prairie-dog, habits, 722, picture, 710  
 Prairies, plains of North America, 3135  
 Prascovia, how she saved her father, 2414  
 Prawns, what they are like, 2587  
 French prawn fisher, picture, 2395  
 prawn, picture, 2585  
 Praxiteles, sculptor, 4160  
 Prayer wheels, used in Tibet, 3938  
 Praying mantis, 3263  
 pictures, face 3141 in colour, 3259  
 Precipice, picture, 480  
 Precipitate, how it is formed, 1668  
 Prehistoric, meaning of the word, 346  
 Prehistoric drawings, picture, 3372  
 Prel, Professor Hermann, his picture of Hermann presenting spoils, 2523  
 Presburg, old capital of Hungary, 2636  
 Presbyterianism, Scottish Church, 1889  
 set up by Calvin, 5238  
 Prescott, watch making, 264  
 Pressgang, at work, picture, 2027  
 Pressure, the different kinds, 3941  
 fluid pressure, 3046, 3048  
 Preston, cotton spinning, 264  
 Preston-Pans, battle of, 1496  
 Pretender, Old and Young - see Stuart  
 Priam, king of Troy, 539  
 Prickly furze, what it is like, 4610  
 Prickly saltwort - see Saltwort  
 Priest's tale, in The Canterbury Tales, 635  
 Primary colours, what they are, 1178, 4508  
 Prime number, what it is, 3075  
 Primogeniture, what it means, 3763  
 Primrose, how to grow, 332, 658  
 how it grows, 4490, picture, 4101  
 Primrose Day, what it is, 2388  
 Primula, name for primrose family, 332  
 Prince, who was poor, story, with pictures, 2363  
 who gave up his freedom, story, 3168  
 prince's five servants, story, with pictures, 4270, 4271  
 Prince Edward's Island, 1244, 1248  
 Prince Finikin and his mamma, poem, and picture in colour, 3846  
 Prince's Island, village, picture, 4250  
 Princes in the Tower, 764, 1080, 4638  
 picture, 1981  
 Princess, search for the real princess, story, 304  
 strange adventures of a princess, Canterbury Tale, 635  
 princess and King Grislybeard, story, and picture, 1209  
 princess's golden ball, story, with pictures, 1816, 1317  
 twelve dancing princesses, story, with picture in colour, 2487  
 princess who became a goose-girl, story, with picture, 2492  
 silent princess, story, with picture, 4707  
 Printing, in England, 270  
 of this book, with pictures, 877  
 what type metal is made of, 1870  
 carried on in Holland, 3403  
 men who gave us printing, 3567  
 fancy lettering, and pictures, 4879  
 Princess's tale, in The Canterbury Tales, 639  
 Prism, what it is, 5041  
 Prisoner's base, game, with picture, 3920  
 Privet, what it is, 4715  
 Privet hawk moth, its life-story, 2986  
 picture in colour, face 2083  
 Proboscis monkey, 684, picture, 583  
 Procopius, a writer, 3162  
 Procter, Adelaide Anna - see Poetry Index  
 Procter, Bryan Waller - see Cornwall  
 Urry  
 Procyon, star, 2614, picture, 2617  
 Prodigious son, parable, 3059  
 Promised Land, 1025  
 Prose, what it is, 41  
 Proserpine, queen of underworld, story, 158  
 Protective colouring, in animals, 1776  
 Protective mimicry, among animals, 3407  
 Protector, name for Cromwell, 693  
 Proteids, how they rebuild the body, 2660  
 Protestant, persecution in Great Britain, 1251, 509  
 persecuted in France, 2392  
 what they are, 2527  
 persecution in the Netherlands, 3460  
 Protestants, founding of Protestant Church, 4948  
 origin of name, 5237  
 Prothero, Rowland, his book, The Psalms in Human Life, 1593  
 Protoplasm, what it is, 1099, 1201, 4597  
 how it breathes, 1633  
 will probably be made by chemists, 4120  
 Protoplasmic poisons, what they are, 4597  
 Protractor, how to make, with picture, 217  
 Provence girl, picture, 2395  
 Proverbs, a game, 230, 3202  
 Prussia, kingdom in Germany, 1640, 2530  
 king proclaimed German emperor, 2277, 2040  
 wars with Napoleon, 2530, 2635  
 enlarged its territory, 2638  
 became great, 2639  
 interfered with the Netherlands, 3163  
 Wupper Valley railway, picture, 4903  
 SEE ALSO GERMANY  
 Prussian blue, how it is made, 4508  
 Prussian carp, picture, 2679  
 Prussic acid, how it affects the blood, 1386  
 how it is formed, 1797  
 its graphic formula, 1798  
 why it is called weak, 1801  
 Frys, Elined, picture, 3039  
 Psalms, a form of lyric poetry, 195  
 of King David, 1593  
 SEE ALSO POETRY INDEX  
 Psyche, legend of, with picture, 1902, 1903  
 Psyche moth, 2993  
 Ptarmigan, 1518, 3408; pictures, 1517, 1777  
 Pterodactyl, flying reptile, picture, 27  
 Ptolemes, Egyptian kings, 4790  
 Ptolemy, Claudius, astronomical studies, 1650  
 Publius Valerius - see Valerius, Publius  
 Puddingstone, stone, with picture, 5197  
 Pueblo, taken by the United States, 4300  
 Puff-adder, 1380, picture, 1379  
 Puffin, bird, 1632; picture, 1631  
 Pugachev, led Russian insurrection, 3629  
 Puget, Pierre, sculptor, 4162  
 Pulse, why it beats, 1589  
 how Galileo measured the pulse, 1658  
 what it is, 3971  
 how it tells temperature, 3972  
 what it tells us, 4342  
 position at wrist, picture, 1589  
 Puma, animal, 280; picture, 284  
 Pumice-stone, what it is, 432, 3034, 3229  
 why it removes stains, 3065  
 Pump, how it works, 2112, 3947, picture, 2112  
 Pumping-engines, use, with picture, 2103  
 Puno, rock, with picture, 1053  
 Puno and Judy, story of, with picture, 1907  
 in an old-time village, picture, 317  
 Puncture, how to mend a tyre, 4249  
 Punic wars, 5202  
 Punjab, its meaning, 1546  
 conquest by the Greeks, 1096  
 conquest by the British, 1762  
 Punning, case of association of ideas, 4911  
 Puno, port of Peru, 4576  
 Puna Arenas, town, 4576  
 Pupae, sort of chrysalis, 1684  
 Purpurs, and the cat, story, 500  
 Puritans, settled in New England, 1112  
 afraid of Popery, 1895  
 driven from England, 2016  
 picture, 2019  
 Purple, how it is made, 850, 1508  
 dye made by Phenicians, 5122  
 Purple emperor, butterfly, 2992  
 picture in colour, face 2083  
 Purple heron, 1954, picture, 1950  
 Purple loosestrife, used as a tonic, 4904  
 what it is like, 4966, picture, 4964  
 Purple mollusc, grass, picture, 1342  
 Purple orchid, and picture, 4237, 4290  
 Purses, conjuring tricks, with pictures, 2566, 3068  
 how to make in crochet, with picture, 4028  
 Puss in Boots, story, with picture, 1140  
 Puss in the corner, game, 314  
 Puss moth, and caterpillar, 2981, 3410  
 pictures, face 2093 in colour, 2991  
 Putting on the donkey's tail, game, 5000  
 Pydna, battle of, 5284  
 Pygmalion, his statue of Galatea, 73  
 Pym, John, opposed Charles I, 804, 1894  
 portrait, 1896  
 Pynson, Richard, printer, 3574

- Reeve, the female of the ruff, 1058  
 Reflection, how we see ourselves, 179  
 water can reflect from a distance, 3034  
 how it is made, 3134  
 the laws of reflection, 5177  
 in water, pictures, 3435  
 Reflex action, what it is, 2884, 4414, 4745  
 Reformation, in England, 2708  
 upheld by the Netherlanders, 3460  
 its history, 4048, 5234  
 the martyrs of, 5067  
 leading men, picture, 5233  
 Reformers, some famous reformers 3697  
 Refraction, effect it has on our sight, 455  
 the breaking of light, 2230, 2319, 5177  
 Regnard, Jean Francois, traveller, 789  
 Regulus, his sacrifice for Rome, 400, 5262  
 how he went back to die, 2133  
 going back to Carthage, picture, 403  
 Rehoboam, became king of Israel, 1735  
 Reichstag, German parliament, 2640  
 Reign of Terror, in France, 1141, 2272  
 Reindeer, useful to Laplanders, 139, 3601  
 lived in this country, 316  
 picture, 137  
 Reis, Philip, made a telephone, 4317  
 Relief, in sculpture, 4159  
 Religion, early leaders of the Church, 2165  
 some founders of religions, 2995  
 SEE ALSO CHRISTIANITY AND VARIOUS RELIGIONS  
 Rembrandt, a great painter, 780, 4587  
 his portrait of his daughter, 782  
 pictures by, 4585, 4591, portrait, 779  
 Remigius, bishop, 2104  
 Remus, brother of Romulus, 5260  
 Renaissance, in Italy, 3156, 3328, 4101  
 Rem, Guido, pictures by, 2713, 4589  
 Rennie, John, bridge building, 1825  
 Renna, milk, solid, 2792  
 Repeater watch, tells time in the dark, 1536  
 Reptiles, prehistoric reptiles, 26  
 what they are, 729  
 at one time masters of the earth, 730  
 the oldest and its, 1217  
 flying reptile, picture, 77  
 various kinds, pictures in colour, 1225  
 skeleton, picture, 3675  
 Republic, steamer, wreck, 3522  
 Reservoir, construction, with picture, 2101  
 Resonators, effect on sound, 937, 1070  
 what they are, 3750, 4597, 4911  
 what the tuning of resonators is, 4915  
 of the voice, 4916  
 Respiration, a name for breathing, 1633  
 Rest, how a thing is kept at rest, 1672  
 a state of balance of forces, 3470  
 Rest-harrow, plant, 4111, 4814  
 Resurrection plant, 1691, 2563, 2584  
 Retort, used for making gas, 251  
 Retriever, a dog, 498, picture, 107  
 Rauben, one of Joseph's brothers, 807  
 Reuben, one of the tribes of Israel, 1026  
 Reuss, river, is a tributary of the Aar, 2064  
 Revenge, ship, 4205  
 Reynolds, Sir Joshua, a painter, 784, 1587  
 pictures, frontispiece to Vol. I, 782, 1592  
 famous men at his house, picture, 4843  
 Rhacoporus, a toad, 1224  
 Rhampsinitus, treasure of, story, 1906  
 Rhea, bird, 1426, picture, 1429  
 Rhine, river, its size 1984, 2521  
 its course 2960, 3153  
 Rhinoceros, its life-story, 996  
 pictures, 35, 994  
 Rhodante, a lady of Greece, 493  
 Rhodes, settlement by Spartans, 5124  
 Rhodes, Colossus, 1770, 1292  
 Rhodes, Coetus of, picture, 936  
 Rhodasia, in South Africa, 1765, 1768  
 Rhone, river, 2392, 2396  
 Rhubarb, how it grows, 3071, 3511, 3726  
 Rhynas, what it is, 41  
 Rhymes, a game, 115  
 Rhythm, what it is, 531  
 Ribbon-fish, a sea fish, 2541, picture, 2449  
 Ribbon-work, table-square, 2151  
 cushion cover, with picture, 3266  
 Ribs, bind the chest, 1589  
 Rice, used for bread, 2253, picture 2923  
 its value as food, and Jesus' 3893  
 Rich young ruler, and Jesus' 3893  
 Richard I. of England in the Crusades,  
 571, 1539, 2704, 3378  
 prisoner, 1259  
 how he forgave his enemy, 2601  
 fought with Robin Hood, 2601  
 ransom used to build walls of London, 3574  
 pictures, 1587, 1592, 2011  
 Richard II., of England, 750, 2704, 2852  
 resigning the crown, picture, 749  
 Richard III., of England, reign, 754  
 murder of little princes, 1980, 4638  
 Richard, the Fearless, 516  
 Richard, duke of York, slain, 1250  
 Richard, duke of York, was murdered  
 with his brother, Edward V., 1980, 4638  
 Richard, grandson of Rollo, his escape,  
 story and picture, 5223  
 Richardson, S., life, 1723, picture, 1725  
 Ricborough, an old Roman castle, 352  
 Richelieu, Cardinal, 2200  
 Richmond Hill, legend, 1083  
 Ride, a girl's desperate ride, story, 2805  
 a woman's ride in the sea, story, with  
 picture, 1069  
 Ridley, Nicholas, bishop, died for his faith,  
 5093, picture, 5069  
 Ridley, William, picture, 3233  
 Riene, Cola di, led Roman citizens, 3020  
 Right-handed, why we are, 3775  
 Right whale, 1084  
 Rize, Mount, has an hotel at the top, 2960  
 Riley, James, see Poetry Index  
 Ring and coin, trick, with picture, 1072  
 Ring-dove, 2214, picture, 2213  
 Ring-la, game 5108  
 Ringed plover, 1780  
 Ringed snake, 1378, picture, 1379  
 Rio de Janeiro, in Brazil, 4506, 1572  
 harbour, picture, 4574  
 Rio Grande del Norte, 4381  
 Rio Tinto, has famous copper mines, 3362  
 Rip van Winkle, the story of his adventures,  
 with pictures, 4095, 1800  
 Rivers, why they run into the sea, 180  
 why we cannot see the bottom, 1080  
 are a little salt, 1270  
 appear still because they are deep, 1576  
 their course depends on the land, 1989  
 why the beds of rivers change, 1092  
 are affected by the moon, 3091  
 why they are always moving, 5024  
 pictures 182, 481, 2103  
 Riviera, 2396, 3650  
 Rivi re, Briton, his picture of Jesus, 2803  
 Rizzo, David, was murdered, 3038  
 Rizzo, Antonio, an architect, 4464  
 Roach, a fish, 2631, picture, 2670  
 Roads, made by Romans, 132  
 made high in the middle, 1438  
 McAdam's improvements, 1438  
 why the sides meet in the distance, 1578  
 rule of the road, 1290, pictures, 4303  
 Rob Roy, story of novel, with picture, 1599  
 Robber, who saved a queen, picture, 753  
 Robbers, and the soldiers, trick, with  
 picture, 2766  
 Robert, duke of Normandy, his life, 1587  
 Robert I., the Bruce, king of Scotland,  
 716, 904, 3082, pictures, 3081  
 Robert II., king of Scotland, 3084  
 Robert III., king of Scotland, 3084  
 Roberts, David, his picture, 1535  
 Roberts, Gladys, picture, 3031  
 Roberts, Lord, praised the Sikh, 300  
 his march from Kabul to Kandahar, 3938  
 Robespierre, Maximilien, 2274, 1082  
 pictures, 1053, 1059  
 Robin, its life story 2054, 2061, 2328  
 pictures, 1744, 2053, 3897  
 Robin Hood, the story, and pictures, 2601  
 Robin Round Cap Well, tale 1321  
 Robinson, Cyril, picture, 2870  
 Robinson, Dorothy, picture, 3233  
 Robinson Crusoe, the real Crusoe, 291  
 the story of, with pictures, 1231  
 Robinson Crusoe's table, puzzle, with  
 pictures, 1929, 2034  
 Rockdale, goblin builders of, tale, 1321  
 Roche Walter, Shakespeare's teacher, 7330  
 Rochegrosse, G., his picture of Huns, 2513  
 Rochester, U.S.A., flour mills, 2003  
 Rochester Cathedral, 1158  
 Rock-crass, alpine, what it is like 1876  
 Rock garden, how to make, 1230, 2412  
 pictures 1936, 2042  
 Rock kangaroo, lives among rocks, 620  
 Rock penguin, 2211, 2215  
 Rock rose, 4712, picture, 4710  
 Rock salt, how it is formed, 1389, 1371  
 mine at Northwich, picture, 3371  
 Rocket, used in building a bridge, 1838  
 Rocket, engine, with picture, 294, 301  
 Rocket, a fireworks, 5449  
 Rocking, is a fish's our eyes pools, 1411  
 Rocks, how animals are shut up in, 28  
 Rocks, how they were formed, 476  
 that look like men and animals, with  
 pictures, 1058, 1059  
 how they are melted by rain, 2621  
 have records of many forms of life, 2899  
 make up the earth's surface, 2892  
 how to make a collection, 1216  
 take in oxygen, 4515  
 how to know, with pictures, 5197  
 pillars of rock, picture, 477  
 Rocky Mountains, in America, 1244, 2063  
 Rodents, animals that gnaw, 720, 2090  
 Rodin, Auguste, work as sculptor, 4162  
 his Citizens of Calais statue, 1169  
 figure from statue Le Penseur, 5025  
 Roe, Frederick, his picture, 1359  
 Roe, Sir Thomas, ambassador, 1698  
 Roebuck, numerous in Scotland, 374  
 Roger, names derived from, 2366  
 Rogers, John, died for his faith, 5008  
 Rogers, Mrs Mary, gave up her life, 744  
 Rogers, Samuel, was a poet banker, 3126  
 poems see Poetry Index  
 Roland, for an Oliver, what it means, 3507  
 Roland, hero of The Song of Roland, 2104  
 fought against the Moors, 1394  
 Roland, Marie Jeanne, guillotined, 4062  
 pictures, 4053, 4059  
 Rolling hitch, with picture, 3283  
 Rollo, duke of Normandy, 2195, 3592  
 Roman Catholics, persecution in England,  
 1792, 2708, 5067  
 Roman Empire see Romans  
 Roman hyacinths, 1350, 1610  
 Roman law, revised by Justinian, 3152  
 Roman numerals, 1513, 1711  
 Romanoffs, ruled in Russia, 3628  
 Romans, made roads, 132, 1438  
 ruled the whole world of their time, 112  
 learned basket-making in Britain, 253  
 came to Britain, 349, 350  
 cities founded by the Romans, 352  
 Roman remains discovered in Kent, 354  
 the first great men of Rome, 399  
 the emperors, 523  
 built splendid bridges, 1825  
 at war with Carthage, 2133, 5262  
 and Christianity, 2175, 2523, 2524  
 lost their power, 2522  
 what the Romans thought before the  
 birth of Christ, 2629  
 conquered the Celts in Switzerland 2062  
 the devotion of a Roman, story, 2632  
 history of Rome, 3012, 3018, 4946, 5259  
 war with the Greeks, 3150, 5262  
 settled in the Iberian Peninsula, 3754  
 how they wrote, 3372  
 their wars with the Persians, 3870  
 a brave Roman youth, story, 3884  
 what they did in sculpture, 4160  
 their power in Egypt, 1256, 4792, 5260  
 famous makers of Rome, 4945  
 war with Parthians, 5005  
 took Macedonia and Greece, 5130  
 grandeur that was Rome 6259  
 legend of their origin 5260  
 wars with the Gauls, 5262  
 navy established, 5262  
 civil war, 5265, 5266  
 coming into England, picture, 349  
 building wall across England, picture, 351  
 ruined house of a governor, picture, 354  
 chariot race, picture, 5228  
 Rome, the city, guess who kept guard of,  
 600, 3857  
 funeral hero of ancient Rome, story, 2002  
 stories of Rome, 2301  
 became the capital of Italy, 3024  
 climb up the Capital hill, story, 3554  
 Christians accused of burning it, 1910  
 its history, 4945, 5269  
 its monuments, 5005  
 persecution of Christians, 5231  
 downfall, 5232  
 taken by the Goths, 5268  
 the bridge that led to Rome, 1394  
 chapel decorated with mosaic, 1931  
 view of the city, 3015  
 the Appian Way, 1909  
 gate through which Paul passed, 1912  
 burning of Rome 1951  
 entered by the Goths 5263  
 Rome, king of Napoleon's son, 2276  
 Romeo and Juliet, play, and picture,  
 131  
 Romilly, Sir Samuel his life 3607  
 Romulus, founder of Rome, 393, 5250

Salt, how the stomach uses it, 2311  
necessity in food, 2038  
city of salt in Poland, 2958  
why sun does not draw salt from sea, 3033  
how animals regulate salt, 3215  
why it is damp before rain, 3760  
why it melts snow, 3804  
where it is found, 3071  
see correction on page 5206  
sugar and salt, story, 3082  
the salt of the earth, 5211  
how prepared for use, with pictures, 5212  
pictures, 2324, 5211, 5212, 5215  
Salts of nitric acid see Nitrates  
Salts of sulphuric acid see Sulphates  
Saltwort, plant, with picture, 6150, 5192  
Salvador, republic, 4392  
flag, picture in colour, 1013  
Salzburg, town, 2831, picture, 2850  
Samarina, taken by Assyrians, 4073  
Samaritan, the Good, parable, 3960  
Samaritand, where it is, and picture, 3936  
dervish, picture, 3939  
Sammies, war with Romans, 2002, 5262  
Samoa, a German island, 2756  
Samphire, plant, 4112, 5186, picture, 5184  
Samson, story of his life, 128, 1259  
Samuel, gave Jews their first king, 128  
story of his life, 248, 1327  
how he condemned Saul, 1477  
pictures, 245, 1330  
Samurai, Japanese retainer, 1140  
San Domingo see Havti  
San Francisco, old Spanish city, 2070  
San Giovanni, church in Florence, its  
gates, 2782, picture, 2783  
San Martin, José de, patriot, 4500  
Sand, how it is made, 479, 1410  
why on the east coast of England, 2075  
why the sun makes sands steam, 3001  
how to build castles, with pictures, 4025  
desert in Central Asia, 1038  
sand builders of the beach, picture, 1415  
grains, through microscope, picture, 2325  
wonder of a world of sand, pictures,  
4122  
Sand-box, plant, seeds, picture, 3732  
Sand-lizard, and picture, 1226  
Sand-martin, and picture, 2211, 2212  
Sand-piper, bird, 1063  
Sand-screw, sea animal, 2587  
Sand-star, sea animal, 2342  
Sand-wiper, a relative of the viper, 1380  
Sanders, Dorothy, portrait, 2707  
Sandhopper, and picture, 2537, 2580  
Sandstone, 943, 2892, 3036, 5197  
Sandwich Isles, 1475, 2070  
Sandwiches, how to make, 3284, 3285  
Sanhedrin, discussing the fate of Jesus,  
picture, 3423  
Sancle, plant, 3051, 4495  
Sankey, Ira, work, 1093, picture, 1099  
Sanmichele, Michele, architect, 4462  
Sansevero, Jacopo, his life, 1462  
Sant, J., picture of Whittington, 307  
Santa Anna, president of Mexico, 4388  
his death, 1392  
Santa Claus, the real Santa Claus, 980  
true story of Father Christmas, with  
pictures in colour, 2172, 2181  
Santa Cruz, founded, 1605, pictures, 1450  
Santa Maria, ship, picture, 37  
Santa Maria Novella, Florence, its beauti-  
ful walls, picture, 2785  
Santangel, statesman of Spain, 2413  
Santiago, in Chile, 4573, picture, 4577  
Santos, a port of Brazil, 1572  
Saône, river, in France, 2392  
Sapor I., king of Persia, 5066  
Sapor II., king of Persia, 5066  
Saracens see Arabs and Moors  
Saragossa, town in Spain, 3354, 3355  
midst of, story, and picture, 1045  
Sarah, Abraham's wife, 471  
Sarawak, flag, picture in colour, 1042  
Sardine, and picture, 2535, 2536  
Sardinia, 3012, 3020, 5201  
Sargon, king of Assyria, 4078  
Sarracenia, plant, and picture, 3541  
Saris, people of Asia, picture, 3939  
Sarus crane, 1958  
Saskatchewan, in Canada, 1242, 1244, 1248  
Sassanian Empire, 5086  
Satellite, its meaning, 2219, 3032  
Satin bower bird, with picture, 717, 1742  
Satin stitch, with picture, 1507, 3072  
Satisfaction, the benefit of not being  
satisfied, 5170

Saturday, meaning of name, 2071, 4134  
Saturn, planet, its moons, 240, 3032, 2030,  
4313  
probably has no life, 2030  
has tides, 3280  
what is known about it, 2423  
Saturn, god, 2071, 4134, picture, 4174  
Satuba ant, how it lives and works, 2944  
Saul, story of his life, 128, 1477  
became king of Israel, 1330, 1733  
scenes in life, pictures, 1481  
Saul of Tarsus see Paul, St  
Saulnier, Madeleine, story of her life, 1054  
Savannah, steamboat, 2172, picture, 2473  
Save, river, of Hungary, 2860, 1222  
Savonarola, his life, 3938, portrait, 3981  
died for his faith, 5236  
bond of vanities, picture, 3980  
Saw, the kind of saw to buy, 109  
how to use a saw, with picture, 109, 110  
Saw-fish, 1086, 2075, picture, 1085  
Saxifrage, different kinds, 2042, 4833  
the saxifrage family, 4112  
pictures, 2042, 4833  
Saxons, came to England, 509  
Saxony, state in Germany, 2038, 2752  
Scabious, flower, its family, 4112  
field scabious, picture, 4423  
Scarfell Pike see Scav, Fell  
Scald, how to treat, 5110  
Scale insect, eaten by the lady bird, 3280  
Scales and the globe, picture, 3551  
Scales, in music see Music  
Scanderbeg, won freedom for Albania, 908  
Scandinavia see Norway and Sweden  
Scandinavian Alps, where they are, 1591  
Scandinavians, their history, 512, 3592  
see ALSO VIKINGS  
Scape, of a flower, 4236, 1488  
Scar, in an English name means cliff, 514  
Scar, on body, not true skin, 1962  
Scarbause, beetle, with picture, 3261  
Scarborough, story of, 1320  
Scarf, how to make, with picture, 1318  
Scarlet pimpernel, picture, 3949  
Scarlet runner bean, how to preserve,  
4363  
Scarlet tiger moth, pictures in colour, face  
2083, page 3141  
Scaw Fell, mountain, 181, picture, 5017  
Scent see Perfume  
Scentless mayweed, 4200, picture, 1288  
Schaffhausen, has wonderful falls, 2000  
Schamy, his life, and picture, 2952  
Schelde, river, in Belgium, 3455  
Schiller, Johann C F, statue in Berlin, 2748  
his life, 5222, portrait, 5217  
Schleswig, province, 2039, 3593  
Schleimann, Dr, his discovery, 5004  
Schlisselsburg, town in Russia, 3630  
Schmalz, Herbert, his picture, By the  
Waters of Babylon, 1597  
Schmitt, Aloys, story of his life, 2111  
Schoeffler, Peter, metal worker, 3569  
Schoolgirl, of Dorset, story, 4831  
Schoolmistress, a game, 231  
Schooner, with picture, 3014  
Schubert, Franz, life, 3249, portrait, 3243  
Schumann, Robert, on practising, 2048  
his life, 3250, portrait, 3243  
Schwarzenburg, Catherine, countess of,  
her heroism, and picture, 3883  
Schwyz, Swiss canton, 2064  
Science, famous men of, 5110  
Scipio, Emilianus, Roman general, 5264  
Scipio, Cornelius, called Africanus, 102  
Scissors, how they are made, pictures, 4711  
Scopas, a great sculptor, 4100  
Scorpion, and pictures, 3301, 3304  
Scotch argus, butterfly, 2992  
Scotch rose, 1810, 4713  
Scotland, what it is like, 66, 186 180  
mountains and rivers, 184, 185  
famous for woollen goods, 263  
invaded by Northmen, 510  
Edward I claimed the crown, 746  
united with England, 899  
Charles and the Covenant, 1838  
story of the Scottish flag, 2333  
how the people's food is changing, 2926  
kings and queens of Scotland, 3079-  
why it is so rainy, 3094  
religious persecution, 5067  
Scots pine, tree, 1463, pictures, 3441  
Scott, Captain, South Pole expedition  
4730; portrait, 4725  
Scott, Sir Gilbert, Albert memorial, 5004  
Scott, Lady J., wrote Anne Laurie, 3741

Scott, Sir Walter, disbelief in gas, 683  
Waverley Novels, 1191, 1599, 1645, 1757  
where he got the story of The Heart  
of Midlothian, 2204  
the story of his life, 2307  
what he said about planting trees, 3137  
poems see Poetry, Index  
pictures, 2307, 2308, 2409, 3002  
monument in Edinburgh, picture, 5013  
Scott, W Bell, his picture of Eddie, 2161  
Scrambleppe, adventures, with pictures  
in colour, 2160, 3614, 3631  
Screw, how to make, with picture, 2577  
Screwdriver, its use, with picture, 110  
Scully, heroism in India in Mutiny, 1913  
Sculpture, a little talk on sculpture, 4159  
a talk about monuments, 5003  
good and bad work, 5005  
see ALSO NAMES OF SCULPTURE AND SCULPTORS  
Scurvy, James, 4830, 5186, picture, 4838  
Scurry, in Constantinople, 3226, 3874  
Scurry, Lake, 3224, 3882  
Seilla, a famous rock, 542, 1743  
Seythians, 3023, 4932  
Sea, how it became dry land, 23  
was at one time very hot, 127  
why it is not too full, 159, 478  
why it is salt, 180, 1270  
how life came out of the sea, 515  
why it is never still, 1055  
how a current is made, 1056  
gets larger in some places, 1270  
why its colour changes, 1864  
conquerors of the sea, 1467  
gold and radium found in, 2619  
how much water there is, 2620  
why moon's reflection follows us, 2636  
what it is like at the bottom, 4130  
why the water does not sink into the  
ground, 3430  
blue light seen at night, 3694  
how we tell what is at bottom, 3755  
how it affects climate, 4123  
when it is warmest, 1324  
why it roars, 1543  
why it does not freeze, 4540  
its depth, 5187  
tides see Tides  
PICTURES OF THE SEA  
washing away the shore, 470, 4131  
sea scenes, 1412  
how it moves, 1074  
view of sea and rocks, 1075  
strange forms of life below the sea, 2334  
some wonderful growths in the sea,  
through the microscope, 2339  
Sea-anemone, its life story, 1411, 2338  
where to find it, 1154  
pictures, 1417, face 2335 in colour, 2337  
Sea-animals, colony of, picture, 2334  
Sea-aster, picture, 5188  
Sea-bear, seal that has fur, 1090  
Sea-blite, plant, 5190, picture, 5192  
Sea-buckthorn, 5190, picture, 5192  
Sea-campion, 5190; picture, 5190, 5191  
Sea-convolvulus, 5190, picture, 5191  
Sea-cucumber, an animal, 2342  
pictures, 1417, face 2335 in colour  
Sea-devil, the angler fish, 2537  
Sea-eagle, 1839, picture, 1838  
Sea-eel, 2451, picture, 2410  
Sea-egg, the sea urchin, 2312  
Sea-elephant, and picture, 1039, 1090  
Sea-flowers, picture in colour, face 2335  
Sea-gull see Gull  
Sea-hedgehog, pictures, 1416, 1417  
Sea-holly, 5190, picture, 5191  
Sea-horse, and picture, 2539, 2540  
Sea-lavender, 1287, 5185  
Sea-lion, 1090, pictures, 32, 1089  
Sea-lyme grass, picture, 1336  
Sea-milkwort, 5186, picture, 5191  
Sea-nettle, jelly fish, 2341, picture 2344  
Sea-onion see Vernal squill  
Sea-otter, picture, 2720  
Sea-pen, formed of animals, picture, 2334  
Sea-pink, 2042, 4830, 5185, picture, 4837  
Sea-pudding, the sea-cucumber, 2312  
Sea-reed, 1331, picture, 1934  
Sea-scorpions, used to live, 20  
Sea-serpent, 30, 2362  
Sea-sickness, how it may be caused, 2416  
Sea-slug, pictures 2341, 2337  
Sea-snake, banded, picture, 1770  
Sea-starwort, see Sea-aster  
Sea-swallow, the tern, 1030  
Sea-trout, the salmon trout, 2080  
Sea-unicorn, the narwhal, 1088

how its progress was hindered, 3020  
 very liable to earthquakes, 3229  
 made a Roman province, 5231  
 a Sicilian cart, picture, 3022  
 Sidney, Colonel, story of his son, and picture, 1804  
 Sidney, Sir Philip, how he gave the cup of cold water, 111; picture, 132  
 lived in Elizabeth's reign, 1252  
 was a friend of Spenser, 3320  
 fought in the Low Countries, 3162  
 poems, see Poetry Index  
 Sierra Morena Mountains, 3351  
 Sierra Nevada Mountains, 3351  
 sight, always an error in our sight, 101  
 we cannot see everything, 605  
 why we cannot see in the dark, 1193  
 why we do not see things upside down, 1680  
 why we see a black spot after looking at the sun, 1081  
 sight from a height, 2392, 3138  
 seeing small things, 2880, 4828  
 why a star is seen star shaped, 2885  
 how we see spots, 3015  
 seeing colours, 3035, 3758, 4507  
 we do not see a thing at once, 3182  
 how far we can see, 1530  
 we see only one thing when we look at it with both eyes, 3511  
 controlled by the brain, 3513  
 how man's sight has developed, 3710  
 how it is governed by brain, 3773  
 how we see things, 3861  
 the different kinds of sight, 1295  
 pictures printed on the eyes, 4518  
 how it varies, 1602  
 influenced by memory, 1905  
 why we see so much at once, 1005  
 Sigismund, Emperor, 2851, 3151, 5231  
 Signs, how to speak by, and picture, 7719  
 Signourney, Mrs., see Poetry Index  
 Sikhs, the noble Sikh, story, 300  
 are fine soldiers, 1013  
 rose against the British, 1702  
 Si-kiang, river, in China, 1016  
 Silchester, buried city found, 24  
 Silenus, companion of Bacchus, 608  
 Siliana, province, 2530, 2752, 2858  
 Silcon, what it is, 1821  
 silk, where it is made, 266, 2191  
 1 French weavers settled in England, 698  
 the wonder of a piece of silk, 3581  
 how it is prepared, 3588  
 threads through microscope, picture, 2325  
 Silkie wife in Shell and lake story, 603  
 Silkworm, its life story, 3583  
 disease among silkworms, 3500  
 pictures, 3583, 3587, 3589  
 Silkworm moth, 2988, 3590; picture, 3581  
 Sill, Edward Rowland, see Poetry Index  
 Silver, cannot be changed, 701  
 why it is called a noble metal, 1301  
 why gold is more valuable, 1570  
 what makes it tarnish, 1776  
 the piece of silver, parable, 3061  
 German silver: see German silver  
 Silver coins, see Coins  
 Silver fox, with picture, 2729  
 Silver pheasant, 1316; picture, 1516  
 Silverweed, 4110; picture, 1711  
 Simeon, one of Joseph's brothers, 508  
 Simla, a city in India, 1514  
 Simmerdale Water, legend, 431  
 Simon, names derived from, 2808  
 Simon, the brother of Jesus, 5182  
 Simon, the Cananite, 5181; portrait, 5179  
 Simon, the Pharisee, 3809  
 Simon, the Tanner, Peter's stay with, 1531  
 Simon says, a game, 220  
 Simon Peter: see Peter  
 Simon's Bay, 1462  
 Simeonides, died for his religion, 916  
 Simpson Pass, road made by Napoleon, 2967  
 Simpson Tunnel, its length, 2664  
 Simpson, Sir James Young, his life, 4201  
 picture, 3197, 4199  
 Sinal, Mount, 1625  
 Sindbad the Sailor, story, with picture, 484  
 how the story may have arisen, 519  
 Sine a term in, 2625  
 Singapore obtained from Dutch, 1679  
 singers, five in all, picture, 2175  
 Sinaloa, related to the Chinca, 1880  
 Singing, a kind of aspiration, 1633  
 Singularity, a good singer uses his voice, 4910  
 Singular number, pictures, 707  
 Siren, its sound, 4780  
 the many-voiced siren, 1850  
 how it works, picture, 1850  
 Sirenia, the manatee and dugong, 1088  
 Sirens, beautiful singing maidens, 512  
 Sirius, star, 1800, 2089, 2011  
 legend of Sirius, 3313  
 Sirius, steamer, 2172  
 Sisal hemp, picture, 3001  
 Sisera, defeated by the Israelites, 1095  
 Sister, the undying love of a, story, 916  
 Sisters of Charity, 3010  
 Sistine Chapel, 4018, 1950, 1952  
 pictures, 4910  
 Sisyphus, of Corinth, married Melepe, 3314  
 his punishment, 1518  
 Sittlingbourne, makes paper, 265  
 Sivatherium, horned animal, picture, 27  
 Six-plumed bird of paradise, 1738  
 Sixpence, the disappearing sixpence, trick, with picture, 1847  
 Sixpenny telegrams, a game, 231  
 Sixtus IV., pope, 4018  
 Size, why dark things look small, 3381  
 the size and weight of things, 3817  
 Skate, fish, 2148; pictures, 1110, 2140  
 Skeleton, what it is, 2197, 1821  
 why we have a skeleton, 3510  
 picture, 2130  
 Siddaw, mountain, picture, 6017  
 Ski-ing, with picture, 2513  
 Skillebeck, O. O., his picture of Jesus, 3101  
 Skimmer, bird, 1030  
 Skin, the skin and its uses, 1583, 1900  
 produces hair and nails, 1901  
 for breathing, in lower animals, 1903  
 can absorb oil, 1903  
 the organ of some of the senses, 1901  
 why it becomes brown in the sun, 3760  
 why moisture can penetrate it, 4121  
 a cut greatly magnified, picture, 1909  
 Skink, African lizard, 1219; picture, 1227  
 Skua, life story, with picture, 1626, 1627  
 Skull, contains the brain, 2138  
 how it has grown in man, 2511  
 pictures, 2111, 2511, 2511  
 Skull-cap, plant, 1070; picture, 4908  
 Skunk, its smell, 280  
 Sky, why it is blue, 421  
 why it is dull before a storm, 1087  
 looks like a dome, 2010  
 what it is and its distance, 3783, 4137  
 Sky-dust, what it is, 2501, 4050  
 Sky-perspective, and stereoscope, 2010  
 Skylark, see Lark  
 Slaked lime, what it is, 1709, 1800, 4337  
 Slamen, salt mine, picture, 5215  
 Slate and pencil games, and pictures, 5113  
 Slavery, has been done away with, 1013  
 in the West Indies, 1878  
 slave who saved his master story, 1014  
 in North America, 2018, 2021  
 Dunstan protected slaves, 2158  
 the Austrians were made slaves, 2528  
 famous slaves, 2009  
 the friend of slaves, story, 3009  
 the slave trade in Africa, 1252  
 Sir Samuel Baker's work, 4115  
 in South America, 4505  
 John Brown's work, and picture, 4958  
 Whittier's work for its abolition, 5088  
 Thoreau's work for abolition, 5090  
 pictures, 2169, 2009, 1009  
 Slavs, invaded Europe, 2522, 3623  
 joined the Eastern Church, 1150  
 Sleep, why we go to sleep, 117  
 what wakes people up, 120, 7135  
 why we sleep quickly in the dark, 1206  
 why our eyelids close during sleep, 1272  
 our thoughts when we sleep, 1185  
 sleep with flowers in the room, 1370  
 hearing when we sleep, 1574  
 with the face covered, 2231  
 with the moon shining on us, 1380  
 brain while we are asleep, 3351  
 why babies require so much sleep, 3361  
 sufficient sleep, 3970  
 why we cannot grasp a bar tightly when we first wake up, 5163  
 Sleep-walking, 1437, 2039  
 Sleeping Beauty, story, with pictures, 162  
 Sleeping sickness, how it affects men, 3145  
 Sleight, picture, 3710  
 Sioane, Sir Hans, naturalist, 1192  
 Sloes, grow on blackthorn, 3151  
 Sloth, animal, 29, 30, 31, 929  
 pictures, 32, 923  
 Slug millipede, 3200  
 Slugs, how to get rid of them, 3288  
 Slays, sea victory, 718  
 Small birdwood, 4117  
 Small scabious, picture, 5189  
 Smallpox, and vaccination, 2121  
 Small, most things small, 1571  
 why things small differently, 1572  
 affects taste, 2208, 1027  
 why a cold affects small, 3210  
 in man and animals, 3717  
 air-waves and smell, 3861  
 Smurke, Sir R., built British Museum, 1102  
 Smith, Adam, life, and portrait, 4341, 1510  
 Smith, H., portrait, 2879  
 Smith, Samuel, see Poetry Index  
 Smith Sound, view near, 1721  
 Smoke, what it is the result of, 914  
 what it is made of, 2228  
 what becomes of smoke, 4336  
 why it has no force, 6250  
 Smoke-rings, how they are made, 3466  
 box that makes, with picture, 4671  
 Smoking, see Tobacco  
 Smollett, Tobias, life, 1731, portrait, 1725  
 Smolt, young salmon, 2680  
 Smooth meadow grass, and picture, 2499  
 Smooth snake, and picture, 1378, 1381  
 Smudgegraphs, and pictures, 325  
 Smyth, Dr. William, sacrificed his life, 431  
 Snail, makes its own shell, 912  
 how bees treat a snail, 2821  
 why only empty shells are found, 3865  
 different kinds of snail, 4770  
 tooth of, magnified, picture, 2326  
 Snake, has no eyelids, 1272  
 snake's parlour, tale, 1321  
 great snake family, 1373  
 poison in its fang, 1110, 1233  
 snake and file, fable, and picture, 1793  
 can do without food, 2118  
 how snakes move, and picture, 1111  
 pictures, 1375  
 Snake-charming, how it can be done, 1978  
 Snake's-head, plant, 1006; picture, 1981  
 Snap, game, 1072  
 Snapsdragon, plant, 867; picture, 2823  
 wild snapsdragon, 1122  
 Sneezing, why we sneeze, 840, 4628  
 Snip-snap-snorum, game, 1885  
 Snipe, its family, 1058  
 Snow, the snow girl of sunny land, story, 130  
 why it is white, 1133  
 snow and rain together, 2073  
 how snow protects plants, 2152  
 what it is, 2509  
 how it forms into waves, 2518  
 takes beautiful forms, 2519  
 snow on mountains, 1859  
 why salt melts snow, 3861  
 how it warms our hands, 4906  
 how snow changes a place, picture, 1129  
 Snow-bunting, 2057  
 Snow-leopard, and picture, 279, 284  
 Snow man, pictures, 2517, 1891  
 Snow mountains, 2516  
 Snow waves, picture, 2518  
 Snowberry, picture, 3805  
 Snowdon, mountain of Wales, 181, 187  
 the elves of Snowdon, legend, 131  
 Snowdrop, bulb root plant, 417, 5272  
 how to treat, 1359, picture, 311  
 Snowdrop and the dwarfs, story, and picture, 2089, 2090  
 Snowflakes, lighter than raindrops, 3070  
 picture, 2519  
 Snowy plover, its nest, 1026  
 Soap, how it cleans things, 2236, 3231  
 colour of soapsuds, 2236  
 why the colour does not come off, 4754  
 Soap-bubbles, how they hold together, and picture, 1774, 1779  
 why they are round, 1779  
 why they rise and fall, 1750  
 game, 3223  
 what to do with, picture, 3398  
 Soar, Albert, portrait, 2879  
 Sobieski, John, new John III of Poland  
 Social reform, first account of, 1021  
 Society Islands, discovery, 1454  
 Sock, how to knit, and picture, 4009

- Staffordshire, china and earthenware, 207  
 Stag, has fine horns, 374  
   the stag looking into the water, fable, and picture, 2871, 2939  
   stag in oval, fable, and picture, 1805  
 Stag Waterfall, pictures, 181, 1339  
 Stag-beetle, pictures, face 3141 in colour, 3891  
 Stage, how to build, and picture, 1771  
 Stains, how to take stains out, 4456  
 Stalactites, and pictures, 177, 1132, 4820  
 Stamen, or flower, and picture, 3736  
 Stamp Act, trouble in America, 2020  
 Stamp collection, with pictures, 5287  
 Stand-up mugs, game, 5103  
 Standard, battle of the, 572, 3080  
 Stanley, Lady, her picture, 4275  
 Stanley, Henry Morton, explorer, 145  
   discovered Livingston, 1931  
   explored the Congo, 1251, picture, 146  
 Stanley, William, and the Great Plague, 81  
 Stanley Falls, on the Congo, 1254  
 Star of Bethlehem, flower, 5272  
 Starch, a carbide hydrate, 1872  
   turned into sugar by saliva, 2206  
   in our bodies, 2345  
   made by green leaves, 2695  
   why it stiffens clothes, 1443  
 Starfish, 729, 1110, 2342  
   pictures, 32, 1414, 2337  
 Starley brothers, first safety bicycle, 2835  
 Starling, bird, 2214, pictures, 1744, 2211  
 Starry saxifrage, picture, 4838  
 Stars, why they are not seen by day, 200  
   what they are made of, 938, 1049  
   are all in movement, 1131  
   distance from each other, 1270  
   world of stars has probably a limit, 1774  
   supposed to control man's fate, 1940  
   light after they cease to exist, 1941  
   guided travellers, 1942  
   are suns, 1944  
   there are many kinds, 1948  
   shape of the stars, 2080, 2885  
   quality of their light changes, 2088  
   origin of names, 2215  
   the stars as we see them, 2609  
   how to measure the distances, 2614  
   their mass, size, and number, 2610, 4437  
   the colour of the stars, 2715  
   how they move, 2717  
   may be divided into three groups, 2719  
   might cause nebulae by colliding, 2864  
   legends of the stars, 3313  
   their use, 3437  
   why they resist gravitation, 3544  
   falling stars are not real stars, 3687  
   why not always visible, 3761, 1601  
   how to guess their size, 4138  
   star seen at time of Armada, picture, 1941  
   telegram to the stars, picture, 1943  
   stars at different seasons, pictures, 2611, 2613, 2615, 2617  
   light that explains the stars, picture in colour, face 2718  
   what the stars are made of, picture in colour, face 2719  
   SEE ALSO THE NAMES OF STARS  
 Statesmen, twelve British, 2379  
 Statue, what it is, 4159  
 Slavanger, very old town, 3602  
 Steam, in ships, 169, 170  
   how it gets its power, 1509, 5250  
   why steam comes from hot water, 1574  
   why it is not yellow, 2245  
   why it puts a light out, 3768  
   how it drives an engine, picture, 1509  
 Steam-engine, came into use, 1010  
   of cardboard, and picture, 3917  
 Steamboat, first built by Fulton, 2022  
   what is wrong with this steamer? puzzle, and picture, 3510, 3616  
   pictures in colour, 166  
 Steamer-duck, bird that cannot fly, 1130  
 Stearine, obtained from fat, 2109  
 Stedman, Edmund see Poetry Index  
 Steel, how buildings are made of, 624  
   sparks made when steel is struck, 1061  
   how steel is got from iron, 1390  
   used for bridges, 1625, 3695  
   how it is made, 1869, 1870  
   power to resist stretching, 3695  
   gets tired, 3977  
 Steel pens, how they are made, pictures, 3374  
 Steele, Richard, life, and portrait, 4675  
 Steele and Addison, picture, 4677  
 Steeplechase, 269
- Steere, Edward, life, 3489, portrait, 3483  
 Stegosaurus, giant lizard, picture, 27  
 Stein, Dr., explored Central Asia, 4038  
 Stella, meaning of name, 2507  
 Stella, the stewardess of the story, 744  
 Stella, the lady Swift loved, 1728  
 Steller sea-eagle, 1840  
 Stem stitch, how to do it, 2171  
 Stenciling, how to do it, 1921, 1250  
 Stephen, king of England, 572, 2702  
   made king, 1249  
 Stephen, name derived from, 2808  
 Stephen, St., king of Hungary, 2851  
 Stephen, the martyr, 4240, picture, 1236  
 Stephenson, George, made the first steam-engine, 65, 1014  
   his engine, and picture, 169, 591  
   his life, 587, pictures, 587, 589  
   see correction on page 5200  
 Stephenson, Robert, George Stephenson's son, 591  
   built the Britannia Bridge, 1825  
 Steppes, plains of Russia, 3135, 3623  
 Stereoscope, what it does, 2422, 2610  
 Sterne, Laurence, life, 1725, portrait, 1730  
 Stettin, port in Germany, 2750, 2752  
 Stevens, Alfred, sculptor, 1162  
 Stevenson, Robert Louis, his life, 2316  
   poems see Poetry Index  
   portrait, 2307  
 Stewart Island, New Zealand, 1458  
 Stick, why a stick holds together, 619  
   why a stick floats, 696  
   noise when swung in the air, 4827  
 Stick and ring, game, 7725  
 Stick insect, 3412, pictures, 3407, 3409  
 Stickerchief, game, and picture, 3513  
 Stickleback, can live in sea or river, 2675  
   its life-story, and picture, 2683, 2684  
 Shilt, bird, what it is like, 1958  
 Shells, how to make, and pictures, 4883  
 Shing-bull, fish, and picture, 2539, 2510  
 Shings, how to treat them, 3309  
 Shanking hellebore, or setterwort, 4707  
 Shirling Bridge, battle, 902  
 Shuteh, in the side, its cause, 2622  
 Shuteh, and pictures, 327, 561  
 Shuteh, and picture, 4191, 4193  
 Shuteh, 280, picture, 3894  
 Stock, flower, 1110, 6270  
 Stock-dove, lives in our woods, 2214  
 Stock-fish, what it is, 2512  
 Stockholm, town, 3600, picture, 3505  
 Stocking, tale by Christmas stocking, 2168  
 Stockton, engines and ships made, 267  
   first railway built, 592  
 Stoddart, M. A. see Poetry Index  
 Stoddard, R. see Poetry Index  
 Stokie, noted for earthenware, 267  
 Stomach, its formation and work, 2343  
   how it is affected by the brain, 3100  
 Stomach-ache, how it is caused, 2346  
 Stomata, what they are, 248  
 Stomoxys, small black fly, 3144  
 Stone, why a stone sinks, 697  
   what a stone is, 943  
   why a hammer will break a stone, 2886  
   why a stone comes down again, 4549  
   builds up living creatures, 4821  
   stone travelling in a circle, picture, 3674  
 Stone, Frank, his picture, The Duet, 3911  
 Stone, M., his picture of James Watt, 589  
 Stone Age, 624, 1300  
 Stone bramble, 4839, picture, 4109  
 Stone icicles, in caves, 482  
 Stone tools, found in this country, 346  
 Stonehatch, 2057, pictures, 1744, 2053  
 Stonecrop, how to treat, 867, 3949  
   various kinds, 1709, 4836, 5186, 5271  
 Stonehenge, what it may have been, 348  
   and the sun's movements, 1939  
   what we learn from it, 4116  
   its history, 5003, picture, 5003  
 Stone-ball, game, with pictures, 4020  
 Stork, that never grew less, legend, 2908  
 Stork, what kind of bird it is, 1954, 1955  
   pictures, 32, 1953, 1955, 1957  
 Stormy petrel, and picture, 1626, 1627  
 Story, that had no end, 4222  
 Story-tellers, great men, 1725  
   great women, 2591  
 Stowe, Mrs Harriet Beecher, author, 2021  
   her book, Uncle Tom's Cabin, 3159  
   her life, 6089, portrait, 6083  
 Strabo, what he said of France, 2380  
 Strafford, earl of, life, 1883, 1892  
   pictures, 1895, 1896  
 Strains, how to cure them, 3390
- Straparola, G. F., wrote fairy tales, 1467  
 Strassburg, town, 2528, 2754  
 Stratford, Roman name, 351  
 Strauss, Johann, composer, 3252  
 Straw, how to support a corn on straws, and picture, 2218  
 Strawberry, where it is grown, 665  
   contains much water, 1169  
   how to grow, 7018, 3720, 3022  
   how its fruit is made up, 4110  
   strawberry fields, pictures, 668, 669  
 Strawberry trees, its family, 1112  
 Strawboard, what it is, 405  
 Stream, its current, 4231  
 Street, what is wrong? puzzle, 1766  
 Stretching, why we stretch, 840  
 Stringed instruments, vibration, 4913  
 Strong, J., rescued from slavery, 4046  
 Strongest thing, fable, and picture, 1223  
 Stroud, umbrella-making, 265  
   see correction on page 5296  
 Strudwick, J. M., his picture of the Foolish Virgins, 3067  
 Strutt, Hon. R. J., and radium, 706  
 Stuart, Charles Edward, attempted to become king, 890, 1491, portrait, 1490  
 Stuart, James Francis Edward, claimed the throne, 899  
 Stuart, J. M., explorer, and portrait, 296  
 Stuart kings, times of the Stuarts, 891  
   helped by Louis XIV., 2200  
 Sturgeon, fish, and picture, 2531, 2533  
 Sturges, Wm., his electro magnet, 2121  
 Sturt, Charles, explorer, 290, portrait, 297  
 Submarine, invented by Fulton, 2471  
   toy submarine, and picture, 3389  
   based on the laws of equilibrium, 3336  
   picture, 2171  
 Submarine mines, picture, 1435  
 Sucker, how to make a leather sucker, 982  
 Suckling fish, 2537  
 Sudan, its history, 1258  
 Suevic, steamship, picture, 1368  
 Suez, Isthmus of, its use in the past, 4251  
 Suez Canal, made Africa an island, 3004  
   time taken to construct, 4258  
 Sugar, produces alcohol, 1872  
   where Demerara is produced, 1878  
   why it is a good food, 2100, 2699  
   chief muscular food, 2626  
   why red drops come when sugar is held to the gas, 3332  
   why it tastes sweet, 4230  
   sugar and salt, story, 6082  
   cultivation of sugar cane, 5115  
   where it comes from, picture in colour, face 5115  
   manufacture of, pictures, 5110, 5120  
 Suggestion, influence on actions, 6135  
 Suleiman Mountains, 3032  
 Suleiman the Magnificent, 3156  
 Sulla, great Roman leader, 403, 5265  
 Sullivan, Sir Arthur, composer, 1996  
   story of his life, 3252, portrait, 3243  
 Sully, duo de, minister of Henry IV., 2200  
 Sulphates, how they are formed, 1798  
 Sulphur, non-metallic element, 1768  
   unpleasant smell when burnt, 1572  
   tarnishes silver, 1770  
 Sulphur-wort dropwort, 4908  
 Sulphuric acid, how it is formed, 1798  
   a strong acid, 1801  
   its specific gravity, 3816  
 Sulphure ether, very mobile, 2505  
 Sultan, how he found an honest man, 2745  
 Sultana raisin, comes from Turkey, 666  
 Sumerians, people of Mesopotamia, 4971  
 Summer, why summer is hot, 483, 3032  
 Summer-chaser, insect, picture, 3261  
 Summer-house, and picture, 4561  
 Sums see Arithmetic  
 Sun, how important it is to us, 6, 250  
   does not rise and set, 117  
   why men thought it was moving, 118  
   the sun and his family, 233  
   what it owes its heat and light to, 421  
   how much larger than the earth it is, 601  
   will become cold, 1367  
   losing heat, 1370, 3283, 4120, 5014  
   does not put out fire, 1372  
   its light passes through clouds, 1573  
   distance from the earth, 1573  
   its tides, 1676, 1678, 2280, 2281  
   eclipse of, 1863, 2086, 3594  
   centre of the solar system, 1942, 1943  
   wonder of the sun, 2081  
   lights the moon, 2219  
   height of objects calculated by, 2224



Tiger beetle, with picture, 3261, 3264  
Tiger lily, 5271, picture, 5279  
Tiger moth, picture, 3894  
Tiger woman, of the jungle, story, 158  
Tiglath Pileser I., king of Assyria, 4977  
Tiglath Pileser III., his reign, 4978  
Tigris, river, in Mesopotamia, 3973, 4971  
Tilius, the Athenian, 1301  
Tilly, General, 2528  
Tilist, peace of, 2276  
Tilton, Theodore see Poetry Index  
Timber see Wood  
Timber hitch, and picture, 3283  
Tumbuktoo, centre of caravan traffic, 1254  
Time, how it is reckoned, 689  
how to tell time by the clock, 1512  
the wonder of time and tide, 2279  
what Greenwich time is, 3020  
how to measure time, 3669  
how men first told the time, picture, 1518  
how men measured time by the sun,  
picture, 1539  
Times, The, newspaper, 3574  
Timocharis, studied the heavens, 1656  
Timon, censured Euclid, 4018  
Timothy, St., his love for St Paul, 4912  
Timur, led the Tartars, 3878  
ruled his empire from Samarkand, 3976  
last of the great Mongol rulers, 4012  
Tin, its specific gravity, 3818  
Tin soldier, the steadfast, story, 130  
Tinder, used for kindling fire, 679, 837  
Tinder-box, The, story, and pictures,  
4120, 4127  
Tintoretto, artist, his life, 4470  
Tip-cat, game, 508  
Tippler pigeon, 2210  
Tiredness, why we get tired, 431, 1801  
how it affects digestion, 3110  
Tissaphernes, Persian general, 6078  
Tissot, James, his pictures, Colluth depicting  
the Israelites, 1478, Saul and David at  
the cave, 1481, Solomon's decision, 1673  
Tisza, river, waters Hungary, 2800  
Tit see Titmouse  
Tit, cat, too, game, 331  
Titcomb, W. H. J., picture by, 987  
Titan, his life, 777  
pictures by, 781, 4600  
studied under Beilini, 4166  
how he treated Titoretto, 1470  
his work as a painter, 4537  
pictures, 770, 1409  
Titicaca, Lake, in the Andes, 4408  
iron will not rust in its waters, 4576  
height above sea level, 4576  
picture, 4497  
Titicaca Indians, picture, 4503  
Titmice, birds, 2216, pictures, 2217  
Titus, with whom Hebrew Christians  
refused to eat, 4752  
Titus, Arch. of monument, 5005, 5208  
picture, 5012  
Titus Aurelius Antoninus, emperor of  
Rome. see Antoninus Plus  
Titus Flavius Sabinius Vespasianus, his  
reign, 527, 5005  
built the Coliseum, 5268, picture, 523  
Titulus, tortured, picture, 4956  
Tiw, Saxon god of w'r, 2670  
Toad, life-story, 1243, 1242, 2127  
pictures, 83, 1223 in colour, 5486  
Toad-lar, plant, 4127; picture, 4120  
Ford's Mouth, rock, picture, 1039  
Tobacco, introduced into England, 2616  
effect on the body, 3318  
laws against children smoking, 3320  
plant, picture, 3315  
Toboggan, how to make, and picture, 2347  
tobogganing, picture, 2513  
Toe, why we have the nails, 1656  
how necessary for a statue, 2418  
how the great toe should move, 2346  
toe-les, to make, 4134  
Togo, Admiral, 1152  
Tollers of the sea, The, story of two  
girls, and picture, 4171  
Tollie, Peter, how he made Luckat-ch  
tollie, coll. of paper, 4723  
Tollie day, with pictures 4577, 4753  
Toko, coll. of paper, 1161  
Tolson, person, picture, 4693  
Toldo, town in Spain, 933, 1534  
Tolmay, Count Leo, 3748  
Toler, American art, 1344  
Tom Brand's School-boy, story of the  
cock, 4033  
Tom-Tom, story, a story, 735

Turtles, 29, 2547  
 Tuscany, region of Italy, 3012  
 passed under the power of Austria, 3018  
 Tuskegee, school for negroes, 2014  
 Twain, Mark, his life, 5092  
 Tway-blade, plant, picture, 4403  
 Tweed, river, 185, 186  
 Tweedledum and Tweedledee, picture in colour, face 1036  
 Twelfth Night, the story of the play, 110  
 Twelve-wired bird of paradise, 1738  
 picture, 1712  
 Twenty Thousand Leagues Under the Sea, story of the book and picture, 4985  
 Two Gentlemen of Verona, The, story of the play, 411  
 Two little kittens, one stormy night, poem, and pictures in colour, 4268  
 Two spotted chequins, picture in colour, face 2537  
 Tying two people together, trick, and picture, 4570  
 Tyler, Wat, leader of a rebellion, 750  
 Tympanum, what it is, 3869  
 Tyndale, Wm, his life, and picture, 11  
 Tyndall, J., found why sky is blue, 421  
 invented a vowel name, 4918  
 his life, 5155, portrait, 519  
 Tyne, river, of England, 187, 190  
 Type metal, what it is made of, 1870  
 Tyr, Norse god, and picture, 4132  
 Tyrant, how meaning has changed, 2609  
 Tyre, city, 1589, 5121  
 Tyrol, rose against the French, 906  
 united with Austria, 2534  
 its beautiful scenery, 2858  
 Tyroless, where they live, 744  
 working in the fields, picture, 2850  
 Tze-hsi, empress of China, picture, in colour, face 4035

## U

Uia, famous for iron mines, 3752  
 Uffizi Gallery, Florence, picture, 2784  
 Uganda, in Africa, 4260, picture, 4259  
 Ugly Duckling, story, and picture, 1692  
 Ullander, what it means, 1770  
 Ullswater, the mind of, tale, 1104  
 Ulna, bone of the forearm, 2627  
 Ulnar nerve, the funny bone, 2627  
 Ulphilas see Wulfil  
 Ultra-violet, colour notes, 3238  
 Ultramarine, colour used in painting, 1811  
 Ulysses, how he went to the wars, 73  
 his strange adventures, 540  
 had the wooden horse built, 542  
 dog that remembered him, story, 4221  
 Umbrella, history of the word, 2778  
 story of the umbrella, 3097  
 how it is made, with pictures, 3097  
 how to mend an umbrella, 4249  
 Umbrella ant, is the Sauba ant, 2044  
 Umbrella bird, with picture, 1736, 1747  
 Umbrians, settled in Italy, 5250  
 Una, and the Red Cross Knight, 699  
 Uncle Remus, tales of see Brer Rabbit  
 Uncle Tom's Cabin, a book about slavery, 2024 5000  
 story of the book, 3150; picture, 3165  
 Undine and Bertha, story, with picture, 4005, 4008  
 Unhappy king of Persia, story, 129  
 Unicorn-fish, has a remarkable spine, 2451  
 Union Jack, story of, 809, 1010, 1010, 2333  
 pictures in colour, face 1111, 1041  
 Unitarian Church, what it is, 4849  
 United Kingdom: see British Empire,  
 British Isles, and names of countries  
 United States of America, became inde-  
 pendent, 1004, 1111, 2022  
 population increased, 1003, 4007  
 figs, 1000, 1840, 2022; with picture in  
 colour, 1843  
 civil war, 1408, 2021, 4390  
 birth of a new nation, 2015  
 slavery, 2018, 2024  
 war with England, 2020  
 first president, 2022  
 war with Mexico, 2022, 4358  
 festivals, 2021  
 United States of day, 2063  
 physical features, 2061  
 mineral wealth, 2064  
 railways, 2064  
 towns and industries, 2064  
 famous cities, 2063  
 cultural possessions, 2070  
 education, 2072  
 Cuba and the Philippines annexed, 2062

United States of America, cotton pro-  
 duced, 4812  
 map, 2063  
 desert soil made fertile, picture, 2071  
 Upright, name of a treaty, 2528  
 Unstable equilibrium, what it means, 3073  
 Unter den Linden, street in Berlin, 2030,  
 picture, 2747  
 Unterwalden, Swiss canton, 2064  
 Up to London, game, and picture, 5113  
 Upernivik, town, picture, 1721  
 Upright sea-lavender, what it is like, 5185  
 Ussala, university town, 1600  
 Ur, city of Mesopotamia, 4071  
 Ural Mountains, 3023, 3752, 3753  
 Uranium, an element, 1303, 1410, 2619  
 Uranus, planet, its distance from sun, 210  
 discovered by Sir William Herschel, 1664  
 what is known about it, 2420  
 Urban the Good, converted Valerian, 993  
 Urban II, pope, with picture, 1586  
 Urban VIII, pope, 4050  
 Uren, was made by a chemist, 1120  
 Uri, canton of Switzerland, 2064  
 Uri, Lake of, in Switzerland, 1685  
 Uric acid, made in our bodies, 1709  
 Urza Major: see Great Bear  
 Urza Minor see Little Bear  
 Ursula, St., legend, with pictures, 988  
 Uruguay, state of South America, 4502,  
 4572  
 flag, picture in colour, 1644  
 cattle industry, with picture, 4573, 4575  
 Uruguay, river, flows into river Plate, 1572  
 Uspallata Pass, tunnelled through, 4573  
 Utrecht, town in Holland, 3450  
 bishops of, in Netherlands, 3458

## V

Vaal, river, in South Africa, 1769  
 Vaccination, 2421, 4200  
 Vacuum, what it is, 684, 945, 1092, 2230,  
 3912  
 Valdar Hills, in Russia, 3023  
 Valdez, besieged Leyden, 3553  
 Valencia, province of Spain, 3354, 3355  
 Valerian, husband of St Cecilia, 993  
 Valerian, Roman emperor, 5006  
 Valerius Publius, a Roman noble, 399  
 Valetta, chief town of Malta, 1875  
 Valette, defended Malta, 1875  
 Valhalla, land of Norse gods, 3417, 4133  
 Valkyries, maidens who attended Woden,  
 4133  
 Valladolid, has been renamed, 4388  
 Valleys, 853, 3227, picture, 180  
 Valparaiso, town, 4573, picture, 4577  
 Value, compared with cost, 1570  
 Valves, in veins, with picture, 1580, 1582  
 Vandals conquered Iberian Peninsula, 3354  
 wars with Romans, 3208  
 Van Dyck, Anthony see Van Dyke  
 Van Dyck, Dr see Poetry Index  
 Van Dyck, Anthony, painter, 780, 4587  
 his portraits of Charles I., 802, 1887, 1891  
 his portrait of Thomas Killgrew, 1501  
 his portrait of a gentleman, 782  
 portrait of the painter, 779  
 Vandyke brown, colour, 1811  
 Van Lake, the fairy maid of, story, 2302,  
 1135  
 Van Tromp, Martin, fought with Blake,  
 897, 1892, 3403  
 Vancouver, was founded, 1248  
 Vanilla caramels, how to make them, 5512  
 Vanishing pillar trick, with picture, 1721  
 Vapour, the same as gas, 3359  
 Vapour moth, female never dies, 2093  
 Vardhamana, what he taught, 2096  
 Varna, chief port of Bulgaria, 3222  
 Varnishing wood, with picture, 2250  
 Vasco da Gama see Gama  
 Vase, from Arabian Sea, story, 608  
 how a vase is made, picture, 4482  
 Vashli, Queen with picture, 2547  
 Vatican, residence of the popes, 778, 3020  
 its building, 1946, 1950  
 Raphael's frescoes, 1951, picture, 1951  
 Sistine Chapel see Sistine Chapel  
 Vandals, were persecuted, 1802  
 Vaughan, Henry see Poetry Index  
 Vecchio Palace, with picture, 2784  
 Vena, stor, 2632  
 pictures, 2611, 2613  
 Vegetable ashes, their value as manure  
 4334  
 Vegetable marrow, how to grow, 3-25,  
 3022

Vegetables, contain many salts, 2093  
 what to sow in March, 2076  
 what to sow in April, 3071, 3176  
 when to transplant greens, 3400  
 Vegetarians, what they eat, 3216  
 Vehicles, rule of the road, 4299  
 Ven, destroyed by the Romans, 400  
 Veins, carry the blood to the heart, 1579  
 pictures, 1580, 1581, 1636  
 Velasquez, D., his work, 780, 4587  
 born at Seville, 3363  
 his picture, A Boy and His Dog, 783  
 his picture, Maids of Honour, 4591  
 portrait, 779  
 Vellum, a kind of parchment, 3371  
 Velocity, what it is, 3672  
 Velvet crab, picture, 2582  
 Vendome Column, in Paris, 5005  
 Venetia, province of Italy, 3012  
 Venetians: see Venice  
 Venezuela, republic of South America,  
 4500, 4578  
 flag, picture, in colour, 1643  
 Venn, vid, vic, Caesar's letter, 5266  
 Venice, her great power, 147  
 built on wooden piles, 1988  
 her history, 3016  
 a busy port, 3024  
 besieged Constantinople, 3154  
 seized Byzantine islands and ports, 3154  
 possessed Greece, 3158, 3219  
 how she became a city, 4459  
 makers of Venice, 4450  
 Bridge of Sighs, 4403, picture, 4460  
 Doge's palace, 4460, pictures, 4459, 4467  
 Rialto Bridge, 4462, picture, 4465  
 Lion of St Mark Column, 5005, pictures,  
 4459, 5008  
 St Mark's see St Mark's  
 Turner's pictures, 777, 3017  
 Grand Canal and Rialto, pictures, 4465  
 Foscarini and Pesaro palaces, pictures, 4407  
 Ventilation, why it is necessary, 1788  
 Ventricle, a chamber of the heart, 1582  
 Venus, goddess, brought Galatea to life, 73  
 got the golden apple from Paris, 78  
 mother of Encas, 544  
 how she treated Psyche, 1902  
 Venus, a planet, 230  
 how far it is from the sun, 240  
 transit of Venus, 1661  
 was supposed to control love, 1940  
 how the planet got its name, 2234  
 seen as a crescent, 2123  
 what is known about it, 2424  
 why it is sometimes brighter, 2300  
 Venus of Milo, statue, 1160  
 picture, 4167  
 Venus's fly-trap, with pictures, 3541, 3714  
 Venus's looking-glass, with picture, 4421,  
 1424  
 Vera Cruz, founded by the Spaniards, 4382  
 taken by the United States, 4390  
 Verbena, plant, 1188, 1178  
 Verelst, Madeleine de how she held the  
 fort, with picture, 5171  
 Vereringtorex, condemned by Julius  
 Caesar, picture, 404  
 Verdi, Giuseppe, musical composer, 3252  
 Verity, Herbert, picture, 1080  
 Vermicelli, preparation of, what, 2025  
 Vernal grass, with picture, 1932  
 Vernal equinox, with picture, 5186, 5184  
 Verne, Jules, his story, Round the World  
 in Eighty Days, 1865  
 his story, Twenty Thousand Leagues  
 Under the Sea, 4985  
 Verona, lord of, tomb, picture, 5005  
 Veronese, Paul Gallari, great painter, 4472  
 his picture, The Feast in the House of  
 Simon, 4471  
 Veronica, speedwell, with picture, 2042  
 Verrocchio, Andrea del, Colleoni monu-  
 ment, 4161, 4165, 4464  
 Versailles Palace, near Paris, 2200, 2207,  
 2270  
 Verse, different kinds of, verse 105  
 Vertebrae, bones of the spine, 732, 2437, 2410  
 pictures, 732, 2441  
 Vertebrates, animals with backbone,  
 732, 2437, 4217  
 Vertigo, dizzings, 2233  
 Verulam, where Arthur died, 194  
 Vespasian, Roman emperor, ruled well,  
 327  
 how Henry VII resembled him, 2700  
 built the Coliseum, 5268  
 picture, 527





Wool, trade encouraged by Black Prince, 750  
 grown for Flemish looms, 3158  
 how to crochet shawl, and pictures, 5107  
 preparing wool in Australia, picture, 1350  
 Wool ball, how to make, with pictures, 973  
 Wool dolls, how to make them, with picture, 111  
 Wool mat, how to make, with picture, 2161  
 Woolen goods, where they are made, 262, 263  
 Woolly bear caterpillars, picture, 2083  
 Woolpit, the pits of Woolpit, legend, 308  
 Woolwich, makes guns, 265  
 Worcester, makes china, 265  
 battle of, 895, 1892  
 how the name is derived, 3103  
 Word-making, a game, 230  
 Words, W do, to be improvements, 3574  
 Words, new words made, 1260  
 we think chiefly in words, 1367  
 how many words we use, 2130  
 the number in English language, 2330  
 made up from names, 2670  
 that tell stories, 2773  
 different words for same thing, 3239  
 SEE ALSO BLADING  
 Wordsworth, William, wrote of Alban, 191  
 why he was great, 957  
 what he said of Nature, 3240  
 his life, 3903; portrait, 3907  
 lived at Rydal Mount, 1339  
 quotation from poem, 5257  
 poems - see Poetry Index  
 Work, of our island home, 183  
 Work-basket, what to do with a girl's  
 work-basket, 327, 451, 603, 703, 809  
 Work-box, how to make a girl's work-box,  
 with picture, 222  
 Workers, of our land, 261  
 at the mills, picture, 263  
 the daily army of workers all over our  
 land, picture in colour, face 267  
 Workshops, pictures of, 50, 200, 1823  
 World, what it is, 5  
 before Columbus, 6  
 what Columbus found, 7  
 men who made the world known, 33  
 first voyage round, 40  
 the size of it, 826  
 why the worlds are round, 1111  
 could not sustain all things born, 2078  
 is not yet all discovered, 2131  
 its history is always being made, 2888  
 how the land and water are placed, 3006  
 is becoming drier, 1171  
 number of worlds, 4114  
 increase of population, 4007  
 world on a table, story, 5206  
 PART OF OF WORLD  
 the procession of the worlds, 1  
 the Old World, 6  
 how the world's story was first told 23  
 map showing size of our country, 96  
 the great worlds that travel through  
 space, face 211  
 finding the other side of the world, 1152  
 SEE ALSO TRAVEL  
 Worms, how they make tunnels, 32  
 breathe underground, 940  
 why they still live when cut in two, 2416  
 make soil fertile, 3255; picture, 3257  
 Worms, Diet of, 5217  
 Wormwood, its family, 1112  
 Wotton, Sir Henry - see Poetry Index  
 Woodward, what it is like, 4122  
 Wras, a fish, 1111  
 Wrath, Cape, north of Scotland, 60  
 Wreck, picture, 2279  
 Wren, how the wrens live together, 2660  
 how long it lives, 2225  
 King Wren, legend, 2371  
 Jenny Wren - see Jenny Wren  
 122 and best pictures, 1711  
 Wren, Sir Christopher, built part of  
 Westminster Abbey, 1137  
 how he built St. Paul's Cathedral, 1160  
 the church spires of Wren, picture, 1163  
 Wrentham, how to make wreath from  
 Wrentham, 702  
 Wrentham, Edward helped to give us  
 Wrentham's power, 1751  
 Wrentham, Orville and Wrentham, what their  
 achievements are like, with picture, 2662  
 Wrentham, the church of, 2661  
 Wrentham, how it is formed, 2345

Writers, famous writers of 19th century, 2307  
 some great English writers, 4075  
 how they think, 1944  
 famous American writers, 5081  
 great writers of other lands, 5217  
 Writing, on clay, 23, 3893  
 how men destroyed all the writings  
 long ago, 31  
 Tom and Nora and the pothooks, 207  
 how to write in cipher, 324, 3515  
 Tom and Nora make more letters, 337  
 five new letters, 437  
 letters with loops above the line, 551  
 letters above and below the line, 648  
 letters below the line, 709  
 learning to write little words, 854  
 Tom and Nora write their names, 967  
 learning to write capital letters, 1004  
 five new capital letters, 1174  
 capital I, J, C, L, and G, 1200  
 capital M, N, S, L, and D, 1402  
 Tom and Nora write figures, 1409  
 Tom and Nora write with ink, 1619  
 a new way of writing figures, 1710  
 Tom and Nora use smaller crutches, 1806  
 Tom and Nora write their letters, 1932  
 how we must not write, 2045  
 how men learned to write, 3371  
 man did not always write, 3978  
 how prehistoric men wrote, picture, 3372  
 SEE ALSO HIEROGLYPHS  
 Writing board, how to make it, with  
 picture, 2765  
 Wrought iron bridges, 1825  
 Wyneck, bird, picture, 3804  
 Wulfia, converted the Goths, 5232  
 Wupper Valley railway, picture, 1903  
 Wurtemberg, agricultural country, 2754  
 Wyatt, Sir Thomas, led a rebellion, 1251  
 Wycliffe, John, preached about Jesus, 14  
 translation of the Bible, 750  
 Reformation leader, 5234, picture, 12  
 Wycombe, makes furniture, 265  
 Wyss, Johann Rudolf, his story, The  
 Swiss Family Robinson, 1015

## X

X-rays, due to radium, 1393  
 what they are, 5175  
 Xavier, Francis, wrote hymns, 1995  
 his conversion, 3990  
 went to Japan, 4150, portrait, 3981  
 Xenon, element in argon, 1393  
 Xenophon, how he led the Greeks from  
 Cunaxa, 5064, 5070  
 Xeres, port in Spain, 2670  
 Xerophytes, class of plants, 5031  
 Xerxes I, king of Persia, his reign, 5062  
 defeated by Greeks, 5120  
 crossing the Hellespont, picture, 5056

## Y

Yak, lives in Tibet, with picture, 130  
 Yakuts, Siberian race, and pictures, 3751  
 Yangtze-kiang, great river of China, 4036  
 Yards, length, 3870  
 Yards, of ships, and picture, 3913  
 Yarkand, where it is, 3934  
 Yarmouth, fishing town, 100  
 Yarn - see Hemp  
 Yarrow, flower, and picture, 4616  
 Yawl, ship, and picture, 3919, 3914  
 Yawning, why we yawn, 810  
 why it is infectious, 3803  
 Yeames, W. F. R.A., his picture, When  
 did you last see your father? 4806  
 his picture of the Reformation, 12  
 his picture, Queen Elizabeth receiving  
 the French Ambassador, 798  
 Year, changes of the, 6  
 what a year is, 120  
 for a year at a day, legend, 1648  
 Yeast, turns sugar into alcohol, 839  
 how it acts in dough, 1113, 1211  
 what yeast is, 1672  
 Yellow, why things go yellow with age,  
 7645  
 Yellow balsam, what it is like, 4839  
 Yellow hunting, how, picture, 1711  
 Yellow dead-nettle, 1703, with picture,  
 4769  
 Yellow Dwarf, story, and picture, 1059  
 Yellow fever, how it is caught, 3146  
 Yellow flag, flower, 5032, 5272  
 picture, 5033  
 Yellow Labrador, 4104, picture, 4612

Yellow hammer, 2055, picture, 2057  
 Yellow horned poppy - see Horned poppy  
 Yellow loosestrife, 4970, picture, 1907  
 Yellow meadow, picture, 4615  
 Yellow mountain saxifrage, picture, 4838  
 Yellow oat grass, picture, 1335  
 Yellow ochre, colour, in painting, 1811  
 Yellow ox-eye, 4421  
 Yellow pansy, 4830; picture, 1835  
 Yellow pea, 4292  
 Yellow rattle, lives on other plants, 3830  
 Yellow river - see Hwang-ho  
 Yellow Sea, where it is, 4147  
 Yellow water-lily, picture, 1800  
 Yellow wort, 4713, picture, 1715  
 Yellowstone National Park, in Rocky  
 Mountains, 1244, 2003, picture, 471  
 Yamsen, river, its length, 3752  
 Yeovil, gloves made at, 265  
 Yew-tree, 1703, pictures, 3453  
 Yezo, northern island of Japan, 4148  
 Yoke, a ship's rudder yoke, 4564  
 Yokohama, opened to foreign trade,  
 4150  
 port of Tokio, 4151, picture, 4147  
 Yonge, Charlotte M., her life, 2509  
 portrait, 2593  
 Yoritomo, first shogun of Japan, 4149  
 tomb at Yokohama, 1154  
 York, a Roman city, 352  
 creek of gold, legend, 1833  
 derivation of name, 3103  
 York, house of, struggle for the crown  
 of England, 754  
 Yorkshire, famous for wool, 262  
 coal-mining, 264  
 Yosemite Valley, what it is like, 2063  
 picture, 688  
 You mustn't laugh, game, 231  
 Young, Dr. Thomas, wrote on energy,  
 3552  
 what he thought of the eye, 4509  
 discovery about light waves, 5042  
 Young Italy Society, 4811  
 Young Turks, party of reformers, 3226  
 Youth, land of, story, and pictures,  
 2003  
 Yuribide, Augustin de, rebelled against  
 the Spaniards, 1386  
 Yucatan, peninsula of Mexico, 1331  
 colonies founded by Spain, 4363  
 Yukon, chief river of Alaska, 2070

## Z

Zacatecas, city of Mexico, picture, 1391  
 Zacheus, and Jesus, 3901  
 Zama, battle of, 5264  
 Zambesi, river, its great bridge, 1826  
 enters the Indian Ocean, 4251  
 pictures, 1770, 2160  
 bridge at Victoria Falls, picture, 1830  
 Zanzibar, where Livingstone's body was  
 carried, 145, 1371  
 celebrated for its cloves, 4262  
 flag, picture in colour, 1614  
 Zebra, its family, 132, pictures 32, 132  
 Zebra solo, picture in colour, face 2547  
 Zealand, united with Holland, 3462  
 Zenda-Avesta, Bible of the Persians, 5068  
 Zepherin, Count, his alms, picture,  
 2690  
 Zero, what absolute zero is, 4010  
 Zeus, god of thunder, 5128  
 statue at Olympia, 5124  
 Zeuxis, Greek painter, 3555  
 Zieglar, bird, 1222, picture, 1229  
 Zinc, dug from the ground, 170  
 Zinc chloride, how it is formed, 1867  
 Zisca, John, led the Hussites, 5214  
 Zodiac, its constellations, 615  
 Zoo, how to make, with picture, 419  
 rabbit and pig, for zoo, with pictures, 677  
 barn door cock for zoo, with pictures, 701  
 dog for our toy zoo, and picture, 1679  
 horse for our toy zoo, and picture, 1669  
 Zoo-quests, game, and picture, 2171  
 Zoroaster, what is known of him, 2660  
 portrait, 2395  
 Zoroastrianism, what it teaches, 2669  
 religion of Media and Persia, 5034  
 Zulux, south African people, 1768  
 Zurich, its interesting history, 2668  
 its industries, 2035, picture, 1364  
 Zurich, Lake, in Switzerland, 2668  
 Zulpheh, battle of, 429  
 Zunder Zee, its formation, 3478, 1168  
 Zwingli, Huldreich, reformer, 2662, 32

Wool, trade encouraged by Black Prince, 750  
 grown for Flemish looms, 3458  
 how to crochet shawl, and pictures, 5107  
 preparing wool in Australia, picture, 1359  
 Wool ball, how to make, with pictures, 973  
 Wool dolls, how to make them, with picture, 114  
 Wool mat, how to make, with picture, 2481  
 Woolen goods, where they are made, 262, 263  
 Woolly bear caterpillars, picture, 2983  
 Woolpit, the pits of Woolpit, legend, 308  
 Woolwich, makes guns, 285  
 Worcester, makes china, 265  
 battle of, 895, 1802  
 how the name is derived, 3403  
 Word-making, a game, 230  
 Words, W de, type improvements, 3574  
 Words, new words made, 1269  
 we think chiefly in words, 1367  
 how many words we use, 2340  
 the number in English language, 2330  
 made up from names, 2670  
 that tell stories, 2773  
 different words for same thing, 3239  
 SEE ALSO READING  
 Wordsworth, William, wrote of Alban, 194  
 why he was great, 957  
 what he said of Nature, 3210  
 his life, 3903, portrait, 3907  
 lived at Rydal Mount, 4339  
 quotation from poem, 5257  
 poems see Poetry Index  
 Work, of our island home, 183  
 Work-basket, what to do with a girl's  
 work-basket, 327, 451, 603, 703, 869  
 Workbox, how to make a girl's workbox,  
 with picture, 225  
 Workers, of our land, 261  
 at the mills, picture, 263  
 the daily army of workers all over our  
 land, picture in colour, face 267  
 Workshops, pictures of, 50, 260, 1828  
 World, what it is, 5  
 before Columbus, 7  
 what Columbus found, 7  
 men who made the world known, 33  
 first voyage round, 40  
 the size of it, 626  
 why the worlds are round, 1131  
 could not sustain all things born, 2078  
 is not yet all discovered, 2331  
 its history is always being made, 2388  
 how the land and water are placed, 3006  
 is becoming drier, 3131  
 number of worlds, 4114  
 increase of population, 1907  
 world on a table, story, 5206  
 PICTURES OF WORLD  
 the procession of the worlds, 4  
 the Old World, 6  
 how the world's story was first told, 23  
 map showing size of our country, 66  
 the great worlds that travel through  
 space, face 233  
 finding the other side of the world, 1452  
 SEE ALSO EARTH  
 Worms, how they make tunnels, 32  
 breathe under, round, 910  
 why they still live when cut in two, 2416  
 make soil fertile, 3265, picture, 3257  
 Worms, Diet of, 6237  
 Wormwood, its family, 4112  
 Wotton, Sir Henry, see Poetry Index  
 Woundwort, what it is like, 1422  
 Wrass, a fish, 1411  
 Wrath, Cape, north of Scotland, 66  
 Wreck, picture, 2270  
 Wren, how the wrens live together, 2060  
 how long it lives, 2328  
 King Wren, legend, 2371  
 Jenny Wren, see Jenny Wren  
 egg and nest, pictures, 1744  
 Wren, Sir Christopher, built part of  
 Westminster Abbey, 1157  
 how he built St Paul's Cathedral, 1160  
 the church spires of Wren, picture, 1163  
 Wrestlers, how to make wrestlers from  
 clothes, 724, 762  
 Wright, Edward, helped to give us  
 Mercator's projection, 1751  
 Wright, Orville and Wilbur, what their  
 aeroplanes are like, with picture, 2602  
 Wrinkles, the cause of, 2654  
 Wrist, how it is formed, 2545

Writers, famous writers of 19th century, 2307  
 some great English writers, 1675  
 how they think, 4041  
 famous American writers, 5083  
 great writers of other lands, 5217  
 Writing, on clay, 23, 3863  
 how men destroyed all the writings  
 long ago, 34  
 Tom and Nora and the pothooks, 207  
 how to write in cipher, 324, 3515  
 Tom and Nora make more letters, 337  
 five new letters, 437  
 letters with loops above the line, 551  
 letters above and below the line, 648  
 letters below the line, 769  
 learning to write little words, 851  
 Tom and Nora write their names, 967  
 learning to write capital letters, 1081  
 five new capital letters, 1174  
 capital I, J, C, E, and G, 1290  
 capital V, N, S, L, and D, 1402  
 Tom and Nora write figures, 1400  
 Tom and Nora write with ink, 1619  
 a new way of writing figures, 1710  
 Tom and Nora use smaller crutches, 1800  
 Tom and Nora write their letters, 1932  
 how we must not write, 2045  
 how men learned to write, 3371  
 man did not always write, 3978  
 how prehistoric men wrote, picture, 3372  
 SEE ALSO HERCULES  
 Writing board, how to make it, with  
 picture, 2765  
 Wrought iron bridges, 1825  
 Wryneck, bird, picture, 3894  
 Wulfila, converted the Goths, 5232  
 Wupper Valley railway, picture, 4063  
 Wurttemberg, agricultural country, 2754  
 Wyatt, Sir Thomas, led a rebellion, 1251  
 Wycliffe, John, preached about Jesus, 14  
 translation of the Bible, 750  
 Reformation leader, 5234, picture, 12  
 Wycombe, makes furniture, 265  
 Wyss, Johann Rudolf, his story, The  
 Swiss Family Robinson, 1915

## X

X-rays, due to radium, 1393  
 what they are, 5175  
 Xavier, Francis, wrote hymns, 1995  
 his conversion, 3990  
 went to Japan, 4150, portrait, 3981  
 Xenon, element in argon, 1393  
 Xenophon, how he led the Greeks from  
 Cunaxa, 5064, 6076  
 Xeres, port in Spain, 2070  
 Xerophytes, class of plants, 5031  
 Xerxes I, King of Persia, his reign, 5062  
 defeated by Greeks, 5120  
 crossing the Hellespont, picture, 5056

## Y

Yak, lives in Tibet, with picture, 139  
 Yakuts, Siberian race, and pictures, 3751  
 Yang-tse-kiang, great river of China, 4036  
 Yard, length, 3670  
 Yards, of ships, and picture, 3913  
 Yarkand, where it is, 3931  
 Yarmouth, fishing town, 190  
 Yarn, see Hemp  
 Yarrow, flower, and picture, 4616  
 Yawl, ship, and picture, 3913, 3914  
 Yawning, why we yawn, 810  
 why it is infectious, 3593  
 Yeames, W. F. R. A., his picture, When  
 did you last see your father? 4806  
 his picture of the Reformation, 12  
 his picture, Queen Elizabeth receiving  
 the French Ambassador, 708  
 Year, changes of the, 5  
 what a year is, 120  
 for a year and a day, legend, 3648  
 Yeast, turns sugar into alcohol, 889  
 how it acts in dough, 1143, 3241  
 what yeast is, 1672  
 Yellow, why things go yellow with age,  
 3365  
 Yellow balsam, what it is like, 4839  
 Yellow hunting egg of, picture, 1744  
 Yellow dead-nettle, 4708, with picture,  
 4708  
 Yellow Dwarf, story, and picture, 1050  
 Yellow fever, how it was conquered, 3146  
 Yellow flag, flower, 5032, 5272  
 picture, 5033  
 Yellow, deabane, 4193, picture, 4612

Yellow hammer, 2055, picture, 2057  
 Yellow horned poppy, see Horned poppy  
 Yellow loosestrife, 4070, picture, 4967  
 Yellow melilot, picture, 1615  
 Yellow mountain saxifrage, picture, 4839  
 Yellow oat grass, picture, 1345  
 Yellow ochre, colour, in painting, 1811  
 Yellow ox-eye, 4121  
 Yellow pansy, 4839, picture, 1895  
 Yellow pea, 4292  
 Yellow rattle, lives on other plants, 3890  
 Yellow river, see Hwang-ho  
 Yellow Sea, where it is, 4117  
 Yellow water-lily, picture, 4960  
 Yellow wort, 4713, picture, 4715  
 Yellowstone National Park, in Rocky  
 Mountains, 1244, 2008, picture, 474  
 Yenisei, river, its length, 3752  
 Yeovil, gloves made at, 265  
 Yew-tree, 4708, pictures, 3453  
 Yezo, northern island of Japan, 4148  
 Yoke, a ship's rudder-yoke, 4564  
 Yokohama, opened to foreign trade,  
 4150  
 port of Tokio, 4151, picture, 4147  
 Yonge, Charlotte M., her life, 2599  
 portrait, 2593  
 Yoritomo, first shogun of Japan, 4149  
 tomb at Yokohama, 4164  
 York, a Roman city, 352  
 crock of gold, legend, 1083  
 derivation of name, 4103  
 York, house of, struggle for the crown  
 of England, 754  
 Yorkshire, famous for wool, 262  
 coal mining, 264  
 Yosemite Valley, what it is like, 2068  
 picture, 688  
 You mustn't laugh, game, 231  
 Young, Dr Thomas, wrote on energy,  
 3552  
 what he thought of the eye, 4500  
 discovery about light waves, 5042  
 Young Italy Society, 4811  
 Young Turks, party of reformers, 3226  
 Youth, land of, story, and pictures,  
 2093  
 Yturbide, Augustin de, rebelled against  
 the Spaniards, 4388  
 Yucatan, peninsula of Mexico, 4381  
 colonies founded by Spain, 4383  
 Yukon, chief river of Alaska, 2070

## Z

Zacatecas, city of Mexico, picture, 4391  
 Zacchaus, and Jesus, 3601  
 Zama, battle of, 5264  
 Zambesi, river, its great bridge, 1826  
 enters the Indian Ocean, 4254  
 pictures, 1770, 2018  
 bridge at Victoria Falls, picture, 1830  
 Zanzibar, where Livingstone's body was  
 carried, 145, 1373  
 celebrated for its cloves, 4262  
 flag, picture in colour, 1614  
 Zebra, its family, 132, picture, 32, 132  
 Zebra sole, picture in colour, face 2337  
 Zealand, united with Holland, 3462  
 Zend-Avesta, Bible of the Persians, 5066  
 Zepheira, Count, his airship, picture,  
 2690  
 Zero, what absolute zero is, 1049  
 Zeus, god of thunder, 6126  
 statue at Olympia, 6128  
 Zeuxis, Greek painter, 4585  
 Zieglar bird, 1223, picture, 1229  
 Zinc, dug from the ground, 176  
 Zinc chloride, how it is formed, 1867  
 Zisca, John, led the Hussites, 5244  
 Zodiac, its constellations, 2015  
 Zoo, how to make, with pictures, 410  
 rabbit and pig for zoo, with pictures, 857  
 barn-door cock for zoo, with pictures, 761  
 dog for our toy zoo, and picture, 1079  
 horse for our toy zoo, and picture, 1608  
 Zoo-guess, game, and pictures, 2153  
 Zoroaster, what is known of him, 3000  
 portrait, 2995  
 Zoroastrianism, what it teaches, 3000  
 religion of Medes and Persians, 5053  
 Zulus, South African people, 1766  
 Zurich, its interesting letters, 2960  
 its industries, 2968, picture, 2963  
 Zürich, Lake, in Switzerland, 2060  
 Zuthphen, battle of, 143  
 Zuyder Zee, its formation, 3158 3158  
 Zwingli, Huldreich, reformer, 2363, 5237

Coal, why does it burn ? 943  
 what is it that makes coal burn ? 2500  
 how did gas get into coal ? 2508  
 why is coal best thing for a fire ? 3757  
 how did men find coal in the earth ? 4140  
 Coal-tar, what is its use ? 2500  
 Coast, why is there shingle on the south coast, and sand on the east ? 3035  
 Coat, how does it keep us warm ? 694  
 Coconut, how does milk get in ? 1989  
 Coins, what are grooves round coins for ? 3034  
 Cold, why are some things colder than others ? 694  
 Colds, how do we give one another colds ? 2508  
 where does a cold come from ? 2508  
 Colour, is there a colour we cannot see ? 3758  
 have things got colour at night ? 3077  
 why do some colours appear different in daylight and in daylight ? 4337  
 Colour-blind, why are some people colour-blind ? 1336  
 Compass, why does it point north ? 4438  
 Constellation, what is it ? 2507  
 Consumption, what causes it ? 2800  
 Coral island, how is it made ? 947  
 Corns, what are corns ? 3973  
 Counting, why do we count in tens ? 1085  
 Country, why is it healthier than town ? 2880  
 Cow, how does it make milk ? 1573  
 Cramp, what causes cramp ? 3972  
 Cream, what makes it form ? 4338  
 Crying, why do I cry when hurt ? 418  
 why does a lump rise in my throat ? 4002  
 is it bad for us to cry ? 4740

## D

Damp, why is a damp bed dangerous ? 3380  
 why does damp air make us ill ? 4593  
 Dark, why can't we see in the dark ? 1433  
 why are some people dark ? 1937  
 why are we afraid in the dark ? 2688  
 why is it darkest just before dawn ? 4235  
 Dark things, why are they warmer than light things ? 3381  
 why do they look smaller than light things ? 3384  
 Day, where does day begin ? 689  
 are there two days at once ? 689  
 where does the day change ? 690  
 is the day becoming longer ? 1078  
 Deafness, why do loud noises make us deaf ? 2420  
 Death, what makes us die ? 2622  
 what makes lower creatures die ? 2623  
 why do we die ? 2623  
 ought we to be afraid to die ? 4745  
 Delta, how is a delta made ? 1826  
 Dewdrop, what is a dew-drop ? 200  
 Diamonds, why are they costly ? 1570  
 are diamonds really valuable ? 1570  
 why do people wear diamonds ? 1570  
 why does a diamond cut glass ? 3238  
 Dimple, what makes a dimple ? 2687  
 Discord, what is the difference between discord and harmony ? 2820  
 Diseases, are we creating new ones ? 2799  
 do diseases disappear ? 2799  
 why are some diseases infectious ? 3072  
 Distance, how can we judge it ? 4904  
 Diver, why has he lead on his boots ? 3760  
 Diving, why do we always rise ? 4234  
 Dizziness : see Giddiness  
 Dog, how does it know a stranger ? 1132  
 why does a dog go round before it lies down ? 4590  
 Donkey, when a donkey eats thistles, why do not the thorns hurt him ? 420  
 Dreams, why do we dream ? 2685  
 why do we dream we can do things that we cannot do when awake ? 2645  
 how do we know we have dreamed ? 3382  
 Drizzling, do people rise three times ? 2235

Duck, how can a duckling swim ? 1130  
 why does a duck never get wet ? 1135  
 Dumb, what makes people dumb ? 2418  
 Dust, where does dust go to ? 3035  
 where does dust come from ? 1113  
 why does a house become dusty ? 1718

## E

Ear-rings, do they affect our eyes ? 3762  
 Ear-trumpet, how does it help the deaf to hear ? 3864  
 Earache, what gives us earache ? 1417  
 Earth, is its pull stronger than anything else ? 620  
 could we see to read by the light of the fire inside the earth ? 1080  
 can we fall off the earth ? 1082  
 where should we go if we fell off it ? 1062  
 is the stuff in earth and air changing places ? 1128  
 what keeps it floating in space ? 1130  
 will our world ever burn out ? 1367  
 will it ever be cool right through ? 1368  
 why did not the earth burn up when it was a ball of fire ? 1371  
 are things in mid-air affected by the earth's movement ? 1572  
 what makes it go round the sun ? 1577  
 why cannot we feel it going round ? 1578  
 do the sun and the moon pull the earth at the same time ? 1876  
 will the earth ever lose the moon, and the tides then cease ? 1076  
 will it go on moving at same rate ? 1078  
 is the earth hollow inside ? 2229  
 how do we know that it moves ? 2507  
 does it look like a star ? 2800  
 is it moon to other worlds ? 3032  
 why does not the earth get in the way of other worlds ? 3036  
 would things have weight without the earth's pull ? 3234  
 why has it no light of its own ? 3380  
 if the earth's centre is fire, why does it not burn everything ? 3431  
 what was in the earth's place before the earth was formed ? 3432  
 if the earth is shrinking, shall we be toppled off ? 3540  
 will the earth shrink to nothing ? 3546  
 will the earth stop spinning ? 4120  
 does it help us to know the way the world turns round ? 4343  
 what difference would it make if the world went the other way round ? 4343  
 would the earth seem to be up in the sky if we were on the moon ? 4343  
 is the earth getting smaller ? 4548  
 did it move faster before it cooled ? 4821  
 how can the earth reflect light when its surface is dull ? 4907

## SEE ALSO RIGHT

Earthquakes, what causes them ? 2232  
 do they travel through the earth ? 3763  
 why does an earthquake shake only part of the earth ? 3763  
 why are there none in England ? 4000  
 Earwigs, do they enter the ear ? 2328  
 Echo, what makes an echo ? 1057  
 Eclipse, why was not the earth's shape always known from an eclipse ? 3431  
 Egg, why does it get hard when boiled ? 1574  
 why does a bad egg float ? 1807  
 is the white, part of the chicken ? 3242  
 why cannot we break an egg if we hold it lengthways ? 4600  
 Electric bell, why does it ring when we press the knob ? 3237  
 Electric lamp, what makes it glow ? 3088  
 Electricity, can it grow plants ? 3689  
 Element, what is an element ? 1372  
 Encyclopedia, what does it mean ? 841  
 End, must all things end ? 5247  
 England, is any of the history of England yet undiscovered ? 4116  
 what does England mean ? 4336  
 Equator, why is it hot there ? 3014  
 Ether, what is the ether ? 2798  
 Eureka, what does it mean ? 3096

Eye, can we believe our eyes ? 101  
 do our eyes deceive us ? 506  
 can our eyes shut out light ? 1267  
 what makes our eyes blink ? 2418  
 what is the good of two eyes ? 2412  
 what makes us see lights when we get a blow on the eye ? 2738  
 what are spots before the eyes ? 3035  
 what makes the bright colours we see when we shut our eyes ? 2015  
 what makes the pupil vary ? 3134  
 what are our eyes made of ? 3077  
 are pictures printed on the eyes ? 1518  
 why do our eyes sparkle when we are merry ? 5168

## SEE ALSO RIGHT

Eye-brows, what are they for ? 811

## F

Face, why does the face change when we think hard ? 1267  
 why does a face in a mirror seem crooked to a person standing by ? 1572  
 why do our faces keep warm ? 2505  
 why does my face turn white when I am frightened ? 3230  
 Factories, why have they tall chimneys ? 3242  
 Faint, what happens when one faints ? 1132  
 why do we faint at sudden news ? 2415  
 Fairy rings, what makes a fairy ring ? 4595  
 Falling object, why does it turn round ? 2421  
 Fat, how do fat and oil differ ? 2802  
 Fear, why have we the feeling of fear when we do not want to be afraid ? 2687  
 why do we fear beetles or spiders ? 1233  
 Feather, why does it ever settle ? 3862  
 Feet, why do they not wear away ? 2418  
 Fiddle, why does a fiddle play higher when the strings are pressed down ? 1775  
 what makes the note when the bow is drawn across the fiddle-strings ? 2620  
 Finger-mark, how can they catch burglars by finger-marks ? 1804  
 Fingers, why have we ten fingers ? 1385  
 why are all our fingers not the same length ? 1986  
 why cannot we feel with our finger when it is numb ? 4311  
 Fire, why is fire hot ? 1000, 3758  
 how does the sun put out a fire ? 1372  
 why does water quench fire ? 1775  
 why is fire cooler through glass ? 2886  
 why does the fire go out ? 3379  
 how can the fire in the centre of the earth burn without air ? 3379  
 can a fire light itself ? 3689  
 why does a newspaper make it burn ? 4117  
 what makes firelight dance ? 1822  
 Fish, why cannot fishes live on land ? 943  
 do fishes sleep under water ? 1272  
 do fishes shut their eyes ? 1272  
 why are some fish caught in rivers ? 1272  
 can a fish hear ? 1807  
 why do not fishes drown ? 1808  
 why do fish die in a jar of water ? 2417  
 can a fish see and hear ? 2866  
 why are not fishes salt ? 3242  
 how do fish live in a frozen pond ? 4220  
 have fishes any feeling ? 4230  
 why does not sea-water make fishes thirsty ? 4341  
 what do fishes feed on ? 4624  
 where are the fishes that lived in the shells we find by the sea ? 4626  
 Flames, why do flames always go up ? 2233  
 why does anything put above a flame attract it ? 3374  
 Flies, how do flies walk on the ceiling ? 942  
 do flies lay eggs ? 1684  
 where do flies go in the winter ? 1684  
 where do flies come from ? 1634  
 is a fly, in comparison with a man, really the stronger of the two ? 4231  
 can a fly see all ways at once ? 5020  
 can flies hear ? 5021  
 Flowers, where do they go in winter ? 420  
 did flowers once all grow wild ? 819  
 do flowers talk ? 1265  
 do flowers sleep ? 1265

Light, if light is a wave of air, do the light-waves go through glass ? 3762  
 why does light go out in water, but flare up in paraffin ? 1114  
 why does the light give light ? 4822  
 Lightning, when the sky opens, why doesn't something fall out ? 2074  
 how far can lightning be seen ? 2503  
 why should it strike certain things ? 2881  
 why does lightning kill a man ? 3088  
 where does lightning go to ? 3088  
 Lime, why does water boil on lime ? 4336  
 Liquid, why does it run up a tube ? 4825  
 Lobsters, why do lobsters turn red ? 2623  
 Loofah, what is the loofah ? 3434  
 Looking-glass, why can we see in it things that are not in front of it ? 5187  
 Luck, what is luck ? 1271

## M

Macintosh, how does it keep us dry ? 695  
 Magnifying glass, why do things look bigger through it ? 1681  
 Man, how did he conquer the earth ? 626  
 will men ever be twice as big as now ? 2687  
 did man always write ? 3978  
 did man always talk ? 3978  
 Manure, why does it make plants grow ? 3973  
 Mars, are there men on Mars ? 3476  
 can there be intelligent life on Mars ? 3436  
 Match, why does a match strike ? 835  
 why does a match go out ? 1440  
 why does a match flare up when turned upside down ? 1823  
 Materialism, are people materialists ? 4139  
 what does materialism mean ? 4139  
 Matter, do we know any kind of matter not found on the earth ? 5023  
 Medicine, why is it nasty ? 3080  
 Memory, can we train the memory ? 5019  
 Metals, why do metals let light through when beaten thin ? 3861  
 how did metals get into the earth ? 1234  
 Microbes, how long do microbes live ? 3785  
 do microbes help to make cream ? 4348  
 has a microbe smaller microbes ? 4743  
 Microscope, can it show us the atoms in wood ? 4310  
 Milk, why does the milk turn sour ? 930  
 does sour milk do us harm ? 940  
 why does thunder turn milk sour ? 3977  
 why does boiling milk flow over ? 4231  
 why does crust form on boiled milk ? 4547  
 Milky Way, will it turn into a world ? 1863  
 what is the Milky Way ? 1863  
 Mirage, what is a mirage 3090  
 what causes the mirage ? 3091  
 Mist, what makes the fields white with mist in hot weather ? 3515  
 what is mist made of ? 4907  
 Moon, do people live on the moon ? 938  
 does the moon pull the sea ? 1675  
 will it ever race the earth ? 1670  
 why does the moon's reflection follow us on the sea ? 2888  
 why does the moon appear to travel with us when we walk ? 2886  
 is there a man in the moon ? 3031  
 what are the marks on the moon ? 3031  
 why does not the moon make waves on rivers as well as on seas ? 3091  
 is there a fire in the moon ? 3237  
 where has its atmosphere gone ? 3690  
 why does the moon grow brighter as the sun sets ? 3690  
 why does it not shine by day ? 3890  
 why can we often see the whole circle of the moon when it is not shining ? 4116  
 will it ever fall into the earth ? 4340  
 Moths, why does a moth fly round a candle ? 1956  
 Motor-cars, why do they have numbers ? 1787  
 what makes a motor car go ? 1771

Mountain, how do we know its height ? 838  
 why is it colder on a mountain-top ? 838  
 what made the mountains ? 3854  
 why do mountains get no higher ? 3859  
 Music, where does music come from ? 505  
 Mustard, why does mustard burn ? 2121

## N

Nails, why have we finger nails and toenails ? 1436, 1986  
 what makes marks on our nails ? 4232  
 Names, why do we have names ? 000  
 National Debt, why, with a mint, has England such a big National Debt ? 2621  
 Nature, why is so much of it green ? 2881  
 is everything a part of nature ? 3210  
 Needle, why does not a needle gain weight when magnetised ? 3761  
 Nettle, what makes a nettle sting ? 842  
 Night, why is it dark at night ? 624  
 Nightmare, what is a nightmare ? 2685  
 Noise, why do we fear loud noises ? 2693  
 what makes noise ? 3976  
 Northern lights, why do the northern lights appear in the north ? 5252

## O

Ocean, where did all the water come from ? 4429  
 Oil, why will oil not mix with water ? 1078  
 when water is put on an oily plate, what causes it to go into beads ? 2505  
 where does oil come from ? 3238  
 why does oil burn so easily ? 3238  
 why does oil float on water ? 3806  
 why does oil make a wheel go ? 1601  
 does oil exist after it has been burnt ? 5023  
 what becomes of oil burnt in lamps ? 5023  
 Old, why do we grow old ? 2881  
 Onions, why do they make our eyes water ? 1989  
 Oranges, why do they not grow in England ? 3386  
 Organ, what makes the sound in it ? 3096  
 Owl, why does it come out at night ? 1867  
 Oxygen, why will pure oxygen kill us ? 4117  
 why do plants give out oxygen only in the daytime ? 4748

## P

Pail, why does not water fall out of a quickly revolving pail ? 3971  
 Pain, what is it ? 3092  
 Paper, why does heat make it curl ? 3979  
 Parrots, why can parrots talk ? 1260  
 do parrots know what they say ? 3231  
 Peacock, how does a peacock know when it is going to rain ? 1435  
 Pent, what is it ? 3542  
 Pencils, what makes a lead pencil write ? 3979  
 why will a slate pencil write on slate but not on paper ? 4304  
 Pendulum, why won't it swing for ever ? 3544  
 Penny, what do the words round it mean ? 3382  
 People, are there more people coming into the world than going out of it ? 4007  
 Petrify, why can some waters petrify wood ? 5250  
 Phonograph, why does the trumpet on it make the sound louder ? 5021  
 Photographs, why have we to develop photographs in a red light ? 1993  
 Phenology, is it true ? 4444  
 Piano, how does the piano play ? 505  
 Pictures, why do some races in pictures seem to follow us ? 1866  
 how is it that we see distance in a picture ? 4305  
 Pigeon, how does it find its way ? 1371

Pin, why does it get hot if rubbed ? 3094  
 why can we hear the scratching of a pin at the other end of a pole ? 1387  
 Pins and needles, what causes it ? 2418  
 Pit, why does not the bad air kill the pitmen ? 4341

Planets, how do we know the names of other planets ? 2234  
 how did they get their names ? 2234  
 what use are planets with no life ? 7137  
 does each planet have gravitation ? 3761  
 how can we tell how many days there are in a year of a planet ? 4792  
 shall we ever get to another planet ? 4119  
 shall we ever talk to another planet ? 4119

Plants, why are plants grown in the dark white ? 1114  
 should we have them in a sick room ? 1371  
 why are some plants always green ? 1778  
 where do they get their salts from ? 1987

has a seed the whole plant in it ? 2077  
 why does a plant do better in a pot that has a hole in the bottom ? 3413  
 how can they grow on a bare wall ? 3138  
 does a plant eat ? 3539  
 how does the seed make the plant's colours ? 4442

Plums, why do plums have stones ? 4142  
 Poison, why are some plants poisonous ? 3385  
 why are some things poisonous ? 4597  
 Poles, do people at the Poles spin round ? 5167

Pop, is the word pop an explosion ? 2227  
 Pop-gun, why does it go pop ? 2227  
 Positivism, what is positivism ? 5249  
 Potato, why does it not rot under the earth while it is growing ? 4119  
 Pulse, what is the pulse ? 3071  
 how can doctors tell our temperature by feeling our pulse ? 3972  
 why does the doctor feel our pulse ? 4342

Pumice-stone, where does it come from ? 3034

## Q

Quicksands, what is their cause ? 3971  
 Quicksilver, what is quicksilver ? 1134  
 why does it run when touched ? 1434  
 why does it roll up into balls ? 1434  
 why do our hands remain dry when dipped in quicksilver ? 8004

## R

Radium, is radium an element ? 1372  
 is there radium in the sea ? 2619  
 would it change the climate of the North Pole ? 4115

Rain, why is the air fresher after it ? 1859  
 could we live without rain ? 1860  
 why does it rain more in winter ? 3240  
 where does rain go ? 3429  
 is it a sign of rain when the smoke is blown down the chimney ? 5166

Rainbow, what makes the rainbow ? 1859  
 where does the rainbow end ? 1859  
 when we are looking at a rainbow, can other people see the other side ? 4905  
 Raindrops, why are raindrops round ? 626  
 Reason, is there a reason for everything ? 5248

Reflection, what makes reflections ? 3474  
 Remember, why can't we remember what happened when we were babies ? 2420  
 River, why does it run into the sea ? 180  
 why can we not see its bottom ? 1060  
 why are rivers fresh ? 1270  
 why do rivers not flow ? 1570  
 why does a river curve ? 1689  
 why do the beds of rivers change ? 1992  
 why is a river always moving ? 5024

Sun, why does the air not stop its light? 3691  
 why does it make our faces brown? 3760  
 will the sun ever have the same temperature as the earth? 4120  
 what set the sun on fire? 4437  
 does the sun ever move? 4138  
 why does it shine during showers? 4549  
 does it never shine in the north? 1823  
 what is the sun made of? 5023  
 Sunlight, can we store sunlight? 1267  
 how can we see sunlight? 3683  
 Sunset, what makes the colours? 421  
 Suspension bridge, how can a few iron rods bear its weight? 3695  
 Swimming, why is it easier to swim in salt water than in fresh? 1993

## T

Tadpole, where does its tail go to? 2418  
 does it know it will lose its tail? 1234  
 Talking, how did men learn to talk? 1268  
 did man always talk? 3978  
 Tall, are we taller in the morning? 2417  
 Taste, why have we different tastes in eating? 3238  
 Tea, why does tea rise to the top of a lump of sugar? 1440  
 Tears, where do tears go? 418  
 why do tears come? 418  
 why are tears salt? 842  
 Teeth, why won't a third tooth grow? 1983  
 what makes our teeth chatter when we are cold or frightened? 4139  
 Telegraph lines, why do they hum? 1863  
 why do they seem to go up and down when we are in a train? 3091  
 Thinking, see Thought  
 Thirteen, why do they say 13 is unlucky? 1271

Thought, where do thoughts come from? 1365  
 where do our thoughts go when we sleep? 1365  
 what makes us think? 1365  
 what is a thought? 1366  
 can we think about things that do not interest us? 1366  
 can anything travel faster than it? 4116  
 can we teach ourselves to think? 5019  
 why can we think of only one thing at a time? 5019  
 can we ever stop thinking? 5020  
 can people read our thoughts? 5251

Thunder, why does it follow lightning? 839  
 why does it thunder? 3785  
 why is the air always hot before it? 4904  
 Thunderbolt, what is a thunderbolt? 3093  
 Ticking, why do we not laugh when we tickle ourselves? 4443

Tides, does the sun make tides? 1675  
 how does the moon cause them? 1675  
 why does the tide come and go? 1676  
 where does sea-water go at low tide? 3784  
 why are there two tides a day? 3978

Tigers, why can they see in the dark? 1433  
 Time, why does time never stop? 3036  
 Tiredness, why do we get tired? 1131, 1861  
 what happens when we get tired? 1861  
 what is the best cure for it? 1861

Toes, could we walk without them? 2416  
 Tooth, see Teeth

Top, could a top spin for ever? 696  
 Tradition, what does it mean? 2802

Train, when I walk in a moving train, am I moving faster than the train? 839  
 why does it keep on the rails? 946  
 why does its smoke go the other way? 1666

what keeps trains on a topsy-turvy railway? 2210  
 why does it not run off the lines? 3973  
 why do birds appear to move when we are in a train? 1750  
 can a train run on one rail? 4901  
 why does it take more power to stop a train than to start it? 5168

Tree, how can we tell its age? 1915  
 why do trees grow upward? 1572  
 why do some trees flower? 2077  
 when a leaf is plucked from a tree, does it hurt the tree? 3093  
 what makes trees turn into coal? 3512  
 why do its branches grow sideways? 3800  
 why do trees grow straight? 3800  
 what makes roots grow? 1800  
 does the earth try to draw the branches of trees downwards? 1861  
 why do trees grow to a certain height and then stop? 3979  
 why do trees not die in winter? 5168  
 Tuning-fork, why does it sound louder when it touches wood? 1597

## U

Union Jack, what does it stand for? 2333  
 what are the three flags in it? 2333  
 how did the three flags become one? 2333

## V

Vacuum, what is a vacuum? 1992  
 why cannot we make a vacuum? 1992  
 Veins, why are veins blue? 3090  
 Venus, why is Venus brighter at some times than at others? 2800  
 Violin, see Liddle  
 Voice, why do voices sound hollow in an empty hall? 4906  
 why does my voice seem louder when I put my hands over my ears? 4906  
 Volcanoes, who lighted them? 2075  
 what makes a volcano? 2621  
 how are volcanoes formed? 3859

## W

Wakening, see Sleep  
 Walking, why do we walk slower uphill? 3437  
 do we use up more energy in walking uphill than on the level? 3437  
 why is it easier to walk on a rough surface than on a smooth one? 3694  
 how does a man walk along a wire? 4749  
 why cannot we walk straight when we shut our eyes? 4905

Wall, when we run into a wall, does the wall push us back? 4744

Want, why do we not get all we want? 3433

War, why cannot two people decide war, and so save many lives? 3241

Warmth, see Heat

Wasp, why does the poison in its body not hurt it? 5021

Watch, what makes a watch go? 5165

Water, where does it boil away to? 508  
 what makes water boil? 508

what makes water run? 619  
 what makes water ripple when we throw a stone into it? 1055

why can we see through water? 1266  
 what is the difference between hard water and soft water? 1569

can we make hard water soft? 1569  
 where does spring-water come from? 1987

when water goes bad, why do colours come over its surface? 1933

why can still water reflect things? 3034  
 why does water crackle when a red-hot poker is put in it? 3095

why should anything lighter than water float? 3096

is it anywhere except in our world? 3384

why does boiling water feel cold? 3386  
 when water is boiling, why can it not be made hotter? 3386

why has water no taste? 3695  
 what makes water gurgle when it comes out of a bottle? 3756

why does its surface never curve? 3760  
 why do small things move towards larger things? 3865

Water, why does hot water clean things better than cold? 4230  
 why is running water purer? 1547  
 why does it swell when heated? 1549  
 why will it not burn as oil does? 5022

Waterspout, what makes it? 2421

Wave, why does it break on each side of a channel at the same time? 1056  
 is every seventh wave bigger? 2235  
 why do rough waves become calm when oil is thrown on them? 2505  
 why do waves curl over and break? 3079

Weather, is our weather due to the fact that we live on an island? 1860  
 how can people foretell it? 2304  
 is there a name for the science of the weather? 2304

Wedding-rings, why do women wear wedding rings? 1370

Weight, do things weigh heavier or lighter when hot or cold? 1762

Wet, why does a wet plate get dry? 2505

Wheel, why does a wheel go round? 695  
 why does a wheel stop? 695  
 how fast can a wheel go round? 696  
 could a wheel fly off an engine? 499  
 why cannot we see the spokes when it goes very fast? 5034

Whirlpool, what makes a whirlpool? 1743

White people, why are white men more civilised than black men? 4908

Will-o'-the-wisp, what is it? 3512

Will-power, can one person influence another's health by will-power? 5170

Wind, where does wind go when it does not blow? 1056

what makes the wind whistle? 1057  
 where does the wind begin? 1057

what changes the way of the wind? 1868  
 why does the wind blow more on the top of a hill than below? 4550

Window, why does a noise break it? 939

Winter, why is it cold in winter? 3032  
 is the cold of winter due to the sun's distance from the earth? 3240

Wood, why does wood rot away? 1988  
 why is iron colder than wood? 3384

why does wood warp? 3865  
 why does heart crack wood? 4442

what makes the knots in wood? 5169

Words, are new words made for new things? 1269

do we think in words? 1367  
 can we think without words? 1367

how many words do most of us use? 2330

World, how big is the world? 626  
 is it always the same weight? 1128

will our world ever burn out? 1367  
 why is the world light when the sun is behind dark clouds? 1573

if all things born were to live, could our world sustain them? 2078

have we discovered all of it? 2331

can it go on for ever? 3514

SEE ALSO EARTH

Worlds, why are they all round? 1131  
 are there people in other worlds? 3496

are there creatures on other worlds? 3496

how many worlds are there? 4114

SEE ALSO TEAVATS

Worm, does it breathe underground? 940  
 why do worms or frogs swarm on a country road after a storm? 1435

why does a worm cut in two live? 2416

Wrinkles, what makes wrinkles? 2884

Writing, did man always write? 3078  
 why will a pen and ink write on paper better than on a slate? 4904

## Y

Yawning, what makes us yawn? 840  
 why is it rude to yawn and stretch? 841

why is yawning infectious? 3861

Yeast, why does it make bread rise? 3241

Yellow, why do things go yellow with age? 3865

Bath Time, 3559  
Battle of Blenheim, The, 108  
Battle of the Baltic, 1861  
Battle-Hymn of the Republic, 4527  
Baxter, Richard  
    — Lord, it Belongs Not to my Care, 4397  
Bed time, 3559  
Bedouin Song, 5046  
Beech Tree a Petition, The, 380  
Bees, The, with music, 4101  
Before Battle, 1561  
Begbie, Harold  
    Seven Days, The, 356  
    What Every Wise Child Should Do, 5053  
Begger Maid, The, 814  
Beggan Man, The, 3119  
Behold her, single in the field, 1501  
Behold Shock-headed Peter, 1801  
Bells, The, 3273  
Bennett, William Cor  
    Lullaby, O Lullaby, 4014  
Beranger, Pierre Jean de  
    Grandmother's Tale, The, 1485  
    Mary Stuart's Farewell, 2371  
    To my Friends Become Ministers, 2292  
Beside the ungathered rice he lay, 1034  
Bessy Bell and Mary Gray, 614  
Best School of All, The, 3128  
Better Land, The, 5240  
Botter Things, 3842  
Better to smell the violet cool, 3842  
Betty Pringle had a little pig, 4528  
Between nose and eyes a strange contest arose, 3557  
Between the dark and the daylight, 3410  
Bible is the book of God, The, 16  
Bid me to live, and I will live, 3793  
Big and Little Things, 3637  
Billy, Billy, come and play, 3349  
Billy Boy, 3129  
Birch and green holly, boys, 1708  
Birds are singing round my window, 4097  
Birds, Beasts, and Fishes, 2482  
Birds in Summer, 4210  
Birds of a feather flock together, 4211  
Birth of Christ, The, 2178  
Bishop Hatto, 2005  
Bliss we are, but much admired, 3029  
Blake William  
    Leholing Green, The, 1561  
    Lamb, The, 532  
    Laughing Song, A, 3272  
    Nurses' Song, 1856  
    Sleep, Beauty Bright, 1708  
    Tiger, The, 1123  
Bless the Lord, O my soul, 1598  
Bless you, bless you bonnie bee, 3276  
Blessed is the man that walketh not, 1696  
Blind Boy, The, 651  
Blind Poy at Play, The, 3418  
Blind Highland Boy, The, 1855  
Blow blow, thou winter wind, 2015  
    see correction on page 5298  
Blow wind blow, and go, mill, go, 4052  
Boarder, Jss  
Bobby Shift is gone to sea, 2022  
Boleyn Man, The, with music, 1654  
Bonar, Dr. Horatius  
    The way, not mine, O Lord, 1013  
Bonnie Jean, 5140  
Bonny Kilmeny grazed up the glen, 4303  
Borwick, Helen B.  
    King's Picture, The, 5240  
Bourne Buckram, Jives de air, 2160  
Bow, wow, wow, who's dog art thou? 4015  
Bow-wow-the dog, 2222  
By and by the weight of centuries he bears, 1523  
Bowles, William Lisle  
    Caged Bird, The, 3548  
Boy and the Apple, The, 4207  
Boy stood on the burning deck, The, 1276  
Boy's Song, 843  
Boyle, Sarah Roberts  
    Voice of the Grass, The, 2748  
Brave'd Battle that Ever was fought, The, 4699  
Break, Break, Break, 2016  
Breast a sword his right arm, The, 1138  
Brewster, Frederick Casham  
    Little Thimble Girl  
    I am a Linnet and I prefer to wear, 3276  
    Let a hawk seek him, 4212  
    Myra, 3123  
Elizabeth Barrett  
    Christ's Lambeth Walk, A, 16  
Brother Robert  
    We'll sing with the world, 543  
    You and the Angels, The, 327

Browning, Robert continued  
Home Thoughts From Abroad, 2007  
How they Brought the Good News, 2291  
Incident of the French Camp, 4097  
Patriot, The, 1861  
Pied Piper of Hamelin, The, 533  
Bruce, Michael  
To the Cuckoo, 1561  
Bryant, William Cullen  
Death of the Flowers, The, 4651  
Gladness of Nature, The, 1266  
Indian at the Burial place of his Fathers, An, 3242  
Planting the Apple-tree, 5240  
To a Waterfowl, 2810  
Builders, The, 4098  
Bull, John  
God Save the King, 5244  
Bunyan, John  
Pilgrim, The, 2004  
Shepherd boy's song in Pilgrim's Progress, The, 7811  
Burial of Sir John Moore, The, 643  
Burial of the Linnet, The, 3420  
Burns, Rev James Drummond  
An Evening Hymn, 4207  
Burns, Robert  
Auld Lang Syne, 3274  
Bannockburn, 816  
Bonnie Jean, 5140  
Cotter's Saturday Night, The, 4011  
John Anderson, 3844  
Man's a Man for a' that, A, 4690  
Red, Red Rose A, 5047  
To a Mountain Daisy, 1560  
Bury the Great Duke, 4647  
Butterfly and the Snail, The, 3637  
Butterfly perched on a mossy brown stile, A, 1924  
Butterfly's Ball, The, 1014  
Buttons, a furling a pair, 3798  
Buy me a milking-pail, 3349  
By the moon's silver ray, 4530  
By the rivers of Babylon, 1508  
Bye, Baby Bunting, 391  
Bye, oh, my baby, 3795  
Byrom, John  
Christians, awake, 2176  
Byron, George Gordon, Lord  
Destruction of Sennacherib, The, 2292  
Prisoner of Chillon, The, 3125  
Solitude, 4610  
Vision of Belshazzar, The, 2127

C

Caged Bird, The, 3558  
Caldwell, William  
Robin's Come, 4854  
Campbell, Thomas  
Battle of the Baltic, 1854  
Beech tree's Petition, The, 389  
Hohenlinden, 1035  
Last Man, The, 3845  
Lord Ulrik's Daughter, 317  
Napoleon and the Young English Sailor, 1783  
Parrot, The, 1276  
Poor Dog Tray, 3272  
Ye Mariners of England, 318  
Canadian Boat Song, A, 3026  
Cane-Bottomed Chair, The, 3841  
Carey, Lady Elizabeth  
True Greatness, 2723  
Carey Henry  
Sally in Our Alley, 4793  
Carey, Phoebe  
Leak in the Dike, The, 1781  
Carroll, Lewis  
A Drus and the Carpenter, The, 1562  
Cavalanche, 1270  
Castle Builder, The, 3558  
Cat came sliding out of a barn, A, 2050  
Cat's Claw Party, The, 1783  
Catastrophe of London, The, 1274  
Cast a more Michel and a pardimon chat, 4530  
Character of a Happy Life, The, 4011  
Charge of the Light Brigade, The, 1782  
Charles Chasley stole the Carley, 4012  
Cherry Ripe, 1146  
Cherubim to the Highland bound, A, 317  
Child and Mother, 3797  
Child and the Snake, The, 2120  
Child's Evening Prayer, A, by Coleridge, 316  
Child's Eve Day Prayer, A, by Graves, with music, 3422  
Child's Thought of God, A, 46  
Children, do you ever, 4203  
Child's Hour, The, 6113  
Child's Song, The, 2720  
Christians, Awake, 2176  
Christmas Hymn, A, 4020  
Christmas Eve, the game is getting fat, 1924



1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840.

[illegible]



I say to thee, do thou repeat, 1783  
 I shot an arrow into the air, 4210  
 I should like to rise and go, 1120  
 I sing the Birth w is born to-night, 2177  
 I sprang to the stirrup, 2291  
 I stood and watched my ships go out, 5214  
 I strove with none, for none was worth my strife, 4090  
 I suppose if all the children, 5213  
 I think When I Read, 5244  
 I travelled Among Unknown Men, 4021  
 I wandered lonely as a cloud, 44  
 I will bless the Lord at all times, 1590  
 I'd like to be a farmer, 3538  
 I'll all the ships I have at sea, 1782  
 I'll all the world were apple pie, 4052  
 I'll bees stay at home, 539  
 I'll Candlemas Day be bright and fair, 1399  
 I'll have as much money as I could spend, 1124  
 I'll want to be happy, 5053  
 I'lls and ans, 2123  
 I'll no one ever marries me, 3500  
 I'll the evening's red and the morning grey, 644  
 I'll the old woman who lived in a shoe, 1856  
 I'll thou shouldst ever come by choice or chance, 1704  
 I'll wishes were horses, 2377  
 I'll you are to be a gentleman, 3798  
 I'll you order a person to bring you some chalk, 1710  
 I'll you sneeze on Monday, you sneeze for danger, 2377  
 I'll tait une bergère, 4212  
 I'll introduce—just wait awhile, 4212  
 I'll sing you a song, 2123  
 I'll tell you a story, 192  
 I'm a chubby little thing, 4400  
 I'm very glad the spring is come, 3020  
 I'm a cottage in Elie, 8030  
 I'm a crack near a cupboard, with dainties provided, 950  
 I'm April, 952  
 I'm his chamber, weak and dying, 2807  
 I'm London once I lost my way, 5142  
 I'm marble balls, as white as milk, 3029  
 I'm Memoriam, extracts, 4091  
 I'm summer I'm very glad, 3559  
 I'm tattered old slippers that toot at the bars, 3841  
 I'm the Children's Hospital, 4523  
 I'm the hollow tree in the old grey tower, 2481  
 I'm the Rock, The, 2125  
 I'm incident in a Railroad Car, An, 5050  
 I'm incident of the French Camp, 4007  
 I'm Indian at the Burial-place of His Fathers, An, 5212  
 I'm industry of Animals, The, 3274  
 I'm Ingelow, Jean  
 I'm Story of Life, A, 5243  
 I'm Ingoldsby legend The Jackdaw of Rheims, 711  
 I'm inscription on a Silver Plate, 4922  
 I'm Into a ward of the whitewashed halls, 1854  
 I'm Into the sunshine, 643  
 I'm Irish Harper, The, 2375  
 I'm Is John Smith within? 4052  
 I'm Is there, for honest poverty, 4090  
 I'm Is this a time to be cloudy and sad, 4266  
 I'm Isle of Long Ago, The, 4050  
 I'm It happened on a summer's day, 3558  
 I'm It is common, 5213  
 I'm It is not growing like a tree, 1856  
 I'm It is the spot I came to seek, 5212  
 I'm It little profits that an idle king, 4050  
 I'm It was a summer evening, 198  
 I'm It was roses, roses, all the way, 4051  
 I'm It was the calm and silent night, 1920  
 I'm It was the schooner Heperus, 640  
 I'm It's good to see the school we knew, 3128  
 I'm I've a letter from thy sire, 1855  
 I'm I've watch'd you now a full half-hour, 4013  
 I'm Ivy Green, The, 2375

Jack and Jill went up the hill, 203, with music, 5245  
 Jack Frost went out on a wintry day, 2178  
 Jack Jingle went 'prentice, 4108  
 Jack Sprat could eat no fat, 713  
 Jack Sprat had a pig, 4016  
 Jackdaw of Rheims, The, 711  
 Jackson, Helen B  
 Coronation, 5048  
 Jacky, come give me thy fiddle, 2377  
 January brings the snow, 1438  
 Je suis un petit poupon, 4100  
 Jealous Jack Frost, 2178  
 Jenner, Edward  
 Signs of Rain, 2293  
 Jenny kissed me when we met, 3793  
 Jenny Wren fell sick, 5052  
 Jeau, Lover of my Soul, 1397  
 Jesus bids us shine, 4098  
 Jesus, tender Shepherd, hear me, 4208  
 Jim and George were two great lords, 2294  
 Jock of Hazeldean, 1850

John Anderson, my Jo, John, 3844  
 John Cook had a little grey mare; he, haw, hum, 3793  
 John Glimp was a citizen, 2643  
 Johnny Head-in-Air, 1094  
 Johnny shall have a new bonnet, 714  
 Jonson, Ben  
 Hy mn on the Nativity of my Saviour, A, 2177  
 True Growth, 1856  
 Joy of Life, 1123

Keats, John  
 Fairy Song, 532  
 On the Grasshopper and Cricket, 4051  
 To a Nightingale, 2722  
 Keble, John  
 Rainbow, The, 1953  
 Kihueny, A Fairy Legend, 4303  
 King, Mrs. Harriet E  
 Crocus, The, 4088  
 King and the Abbot, The, 2373  
 King Baby on his throne, 3500  
 King Bruce and the Spider, 2479  
 King, from the council chamber came, The, 5240  
 King Lear and His Three Daughters, 2647  
 King of Clubs, he often drubs, The, 1038  
 King of France and four thousand men, The, 2294  
 King of France went up the hill, The, 2123  
 King Pippin built a fine new hall, 714  
 King was on his throne, The, 2127  
 King was sick His cheek was red, The, 44  
 King's Picture, The, 5240  
 Kingdom of God, The, 1783  
 Kingsley, Charles  
 I saw, A, 44  
 Sands of Dee, The, 388  
 Three Fishers, The, 2480  
 Tidd River, The, 712  
 Ugly Princess, The, 1527  
 Young and Old, 3348  
 Kinney, Coates  
 Rain on the Roof, 5049  
 Kipling, Rudyard  
 Children's Song, The, 2720  
 Kiss when I wake in the morning, A, 4924  
 Kitten and the Falling Leaves, The, 3420  
 Knave of Hearts, The, face 302

La Bercère, 4212  
 La boulangère à des écus, 1330  
 La plus aimable à mon gré, 4212  
 Lacoste, Mrs  
 Somebody's Darling, 4854  
 Ladder of St Augustine, The, quotation from, 2141  
 Lady bird, fly, with music, 3023  
 Lady-bird, lady-bird, fly away home, 1278  
 Lafontaine, Jean de  
 Castle builders, The, 3558  
 Laid in my quiet bed in study, as I were, 1855  
 Lamb, The, 532  
 Lamb, Charles and Mary  
 Child and the Snake, The, 3128  
 Housekeeper, The, 4264  
 Lame Brother, The, 3418  
 Old Familiar Faces, The, 3550  
 Lamb, John  
 Beggar Man, The, 3119  
 Lambs, 3550  
 Lame Brother, The, 3418  
 Lamps now glitter down the street, The, 43  
 Land of Nod, The, 1035  
 Land of our birth, we pledge to thee, 2720  
 Land of Thus and So, The, 5047  
 Landor, Walter Savage  
 Bins, 4090  
 Late Leaves, 3704  
 Lark bird, lark bird soaring high, 3559  
 Lara Porsona of Clissum, 1395  
 Last Charge of the French at Waterloo, The, 2480  
 Last Man, The, 3845  
 Late I caves, 3704  
 Laughing Song, A, 3272  
 Lavender blue and rosemary green, 4016  
 Lavender a blue, diddle, diddle, with music, 4925  
 Lay me a green sod under my head, 2000  
 Lay of the Last Minstrel, The, 2803  
 Lead Kindly Light, 1093  
 Leak in the Dyke, The, 1781  
 Lear, Edwin  
 Nonsense rhymes, 615, 1038, 4100  
 Leaves are falling, so am I, The, 3794  
 Legaré, James Matthew  
 Abrah Mohammed, 4263  
 Lend me thy mare to go a mile, 4207  
 Les Petits Bateaux, 4212  
 Lesson of the Honey Bees, 2910

Morning and Evening, 1810  
 Morning, evening, noon, and night, 4207  
 Morris, George P  
   Beech Tree's Petition, The, 389  
 Morris, William  
   Voice of Toil, The, 3844  
 Mother, may I go and bathe ? 4528  
 Mother Mitchell one day lost her pussy, alack, 4530  
 Mother to Her Infant, The, 3348  
 Mountain and the Squirrel, The, 200  
 Mouse and the Cake, The, 1209  
 Mouse found a beautiful piece of plum cake, A, 1209  
 Mouse's Petition, The, 1855  
 Mr East gave a feast, 4528  
 Multiplication is veneration, 952  
 My banks they are furnished with bees, 951  
 My beautiful ! my beautiful ! that standest meekly by, 314  
 My country, 'tis of thee, 3030  
 My dear, do you know, 1529  
 My fairest child, I have no song to give you, 44  
 My father he died, 2205  
 My father he left me three acres of land, 3030  
 My heart aches, and a drowsy numbness pains, 2722  
 My heart leaps up when I behold, 643  
 My house is red—a little house, 3422  
 My Lady Wind, 2649  
 My Little Brother, 4526  
 My little old man and I fell out, 2128  
 My lov'd, my honour'd, much respected friend, 4011  
 My Maid Mary, 2180  
 My mind lets go a thousand things, 4096  
 My mind to me a kingdom is, 712  
 My Mother, 814  
 My Other Me, 1206  
 My parents bow, and lead me forth, 4527  
 My parents sleep both in one grave, 3418  
 My Playmate, 1020  
 My Shadow, 43  
 My Ships, 1782  
 My soul there is a country 4098  
 My strength is failing fast, 3417  
 My true love hath my heart, and I have his, 3793

## N

Name in the Sand, A, 4208  
 Napoleon and the Young English Sailor, 1783  
 Nation's Strength, A, 4524  
 Nestling Hour, The, 3559  
 New Pilgrimage, The, 3559  
 Newbolt, Henry  
   Best School of All, The, 3128  
   Torch of Life, The, 3420  
 Newman, Cardinal  
   Lead, Kindly Light 1905  
 Nick and a nock, A, 4010  
 Nightingale and the Glow-worm, The, 332  
 Nightingale, that all day long, A, 512  
 No, no, my friends, my wants are few, 2292  
 No stir in the air, no stir in the sea, 1123  
 No sun, no moon 4326  
 No, trust me, she is peevish, sullen, froward, 2020  
 Noblest Roman, The, 2910  
 Noon was shady, and soft airs, The, 2120  
 Norman Baron, The, 2807  
 North wind doth blow, The, 190  
 Norton, Hon Mrs  
   Arab's Farewell to His Steed, The, 311  
   see correction on page 5296  
 Not a drum was heard, not a funeral note, 643  
 Not gold, but only man can make, 4524  
 November in England, 4528  
 Now, all of you, give heed unto, 4632  
 Now, he who knows old Christmas, 5048  
 Now the bright morning star, day's harbinger, 1275  
 Now the day is over, 5049  
 Now, what do you think, 1267  
 Nurse's Song, 1636

## O

O, all you little Blackie-tops, 818  
 O b'the new owner, I have heard, 1705  
 O dear, what's in the matter be ? with music, 538  
 O fir tree Pine, 3028  
 O God ! it is a fearful thing 3125  
 O God ! methinks it were a happy life, 2013  
 O God our help in ages past, 1765  
 O leave this barren spot to me, 589  
 O leave, O leave, India 27, 2008  
 O Little Lamb, the month's cock, 3450  
 O Mary, go and call the little home, 368  
 O Mother My-Love, if you have lost your hand, 3797  
 O, my love's like a red, red rose, 5947  
 O my, what is that thing, called light, 661  
 O thou that standest at the man, 1619  
 Ohn on Immortality 4525  
 Ohn on the Death of William, 1647  
 O'er a low arch the setting sun, 4243  
 Of a' the arts the mind can live, 3111

Of all the gay birds that e'er I did see, 3795  
 Of all the girls that are so smart, 3703  
 Of Nelson and the North 1854  
 Officer's Grave, The, 1785  
 Oft I had heard of Lucy Gray, 1854  
 Oft in the Stilly Night, 3791  
 Ogilvie, Will H.  
   Apple Winds, The, 5244  
   Holyrood, 5138  
 Oh, a dainty plant is the Ivy green, 2375  
 Oh, a wonderful horse is the Fly-Away Horse, 2376  
 Oh, a wonderful stream is the river of Time, 4050  
 Oh, hear a pensive prisoner's prayer, 1855  
 Oh, hush thee, my baby, thy sire was a knight, 814  
 Oh, Look at the Moon, 3020  
 Oh, my pretty cock, 3121  
 Oh, ring the bells 3349  
 Oh, to be in England, 2007  
 Oh, where and oh where is my little wee dog ? 4528  
 Oh, where are all the good little girls ? 3123  
 Oh, who is so merry, 2322  
 Oh, who would keep a little bird confined ? 3558  
 Oh, young Lochinvar is come out of the West, 4087  
 O'Keefe, Adelaide  
   Use of Sight, 3557  
 Old Abram Brown is dead and gone, 2128  
 Old Christmas, by Mary Howitt, 5048  
 Old Christmas, by Sir Walter Scott, 2170  
 Old Cloak, The, 3794  
 Old Clock on the Stairs, The, 3120  
 Old Familiar Faces, The, 3556  
 Old King Cole was a merry old soul, 4856, with music, 4857  
 Old Mother Goose, 537  
 Old Mother Hubbard, 202  
 Old Mother Twitchett had but one eye, 3029  
 Old Woman and her Pig, The, 953  
 Old woman, old woman, shall we go shearing ? 4528  
 Old Woman Tossed up in a Blanket, with music, 1390  
 Old woman was sweeping her house, An, 953  
 On came the whirlwind—like the last, 2180  
 On Christmas Eve I turned the spit, 4098  
 On Linden, when the sun was low, 1035  
 On May morning, 1273  
 On Saturday night, 3038  
 On Sir Philip Sidney, 3842  
 On the bridge of Avignon, 6142  
 On the Grasshopper and Cricket, 4051  
 On the green banks of Shannon, when Sheelah was nigh, 2375  
 Once in Persia ruled a king, 380  
 Once in Royal David's City, 2178  
 Once on a time I saw a bear, 714  
 Once upon a midnight dreary, 1263  
 One and one, 3129  
 One hot summer day a hunter went out, 1092  
 One, I love, two, I love, 2922  
 One lesson, Nature, let me learn of thee, 5242  
 One misty morning, 3350  
 One, two, buckle my shoe, 2614  
 One, two, three, four, five, 3421  
 Only a Baby Small, 2723  
 Opie, Mrs Amelia  
   Orphan Boy, The, 1486  
 Opportunity, 4996  
 O'Reilly, John Boyle  
   Cry of the Dreamer, The, 4680  
 Orphan Boy, The, 1486  
 Orpheus with his lute made trees, 2015  
 O'Shaughnessy, Arthur  
   Work of the Poets, The, 4266  
 Others abide our question Thou art free, 4013  
 Our doctor had call'd in another, 4521  
 Out of the frozen earth below, 4683  
 Over hill, over dale, 2915  
 Over the Hill 5048  
 Owl, The, 1663  
 Owl and the Pussy Cat The 5111  
 Owl to her mate is calling, The, 4834

## P

Pan ! Qu'est-ce qu'est il ? 4900  
 Papa, les petits bateaux, 4212  
 Parable, A, 5139  
 Parrot, The, 1276  
 Parrot, from the Spanish Main, A, 1276  
 Passing through a little wood, 1925  
 Passionate Shepherd, The, 5047  
 Pat a cake, pat-a-cake, baker's man, 1036  
 Patriot, The, 1651  
 Paul Revere's Ride, 1122  
 Payne, John Howard  
   Home, Sweet Home, 383  
 Peace, 1096  
 Peacock, Thomas Love  
   Birds and the Mulberry Tree, The, 1272  
 Peasant stood before a king and a god, A, 4205  
 Pense plucking hot, 1277  
 Peg, peg, with a wooden leg, 3634

Silence augmenteth grief, writhing increaseth rage, 3842  
 Sill, Edward Rowland  
   Opportunity, 4398  
 Silvia, 3844  
 Simon Brodie had a cow, 3038  
 Simple Simon met a plemyn, 5216  
 Sing a song of sixpence, with music, 321  
 Sing, sing, what shall I sing? 391  
 Sir Sidney Smith, 1853  
 Skylark, The, 5137  
 Slave's Dream, The, 1034  
 Sleep at the Inn o' Dreams, 4014  
 Sleep, baby, sleep, 3276  
 Sheep, Beauty Bright, 1708  
 Sleep, sonny darling, your mother's delight, 3027  
 Sluggard, The, 572  
 Slumber, my darling, no danger is near, 3318  
 Smith, Samuel Francis  
   My country, 'tis of thee, 3036  
 Snel, anvil, 644  
 So are the stars and the arching skies, 5243  
 So nigh is grandeur to our dust, 5140  
 So witty the honey bees, 2019  
 Solitude, 4640  
 Solomon Grundy, 320  
 Some little mice eat in a barn to spin, 2724  
 Somebody, crawls into mamma's bed, 3277  
 Somebody's Darling, 4851  
 Somebody's Mother, 5211  
 Somewhat back from the village street, 3128  
 Somewhere it is always light, 1487  
 Son of My Heart, 3027  
 Song of Birds, 4527  
 Song of the Shirt, The, 2808  
 Song of the Two Hares, The, 3027  
 Sound Loud the Clarion, 3548  
 South wind brings wet weather, The, 614  
 Southey, Robert  
   Battle of Blenheim, The, 193  
   Bishop Hatto, 2005  
   Cataract of Lodore, The, 1274  
   Father William, 612  
   Inchcape Rock, The, 2125  
   Traveller's Return, The, 2125  
 Sower, The, 3845  
 Spacious Firmament on High, The, 4014  
 Spanish Armada, The, 1559  
 Speak Gently, 4265  
 Spider and the Fly, The, 3555  
 Spring Walk, The, 3120  
 Spring, where are you tarrying now? 316  
 Stanza on Freedom, A, 4307  
 Stars, The, 318  
 Stately homes of England, The, 199  
 Stay, lady, stay! for mercy's sake, 1486  
 Steadman, Edmund Clarence  
   Discoverer, The, 4396  
 Stevenson, Robert Louis  
   Armies in the Fire, 43  
   Land of Nod, The, 1035  
   My Shadow, 43  
   Rain, 12  
   Travel, 1120  
   Unseen Playmate, The, 314  
 Stoddart, M. A.  
   Walk in Spring, A, 3028  
 Stoddard, Richard Henry  
   Birds, 4007  
   Flight of the Arrow, The, 4306  
   Flight of Youth, The, 5242  
 Stork flew over a town one day, The, 2293  
 Stormy Petrel, The, 4526  
 Story of a Blackmoor, The, 4693  
 Story of Fligely Philip, The, 4691  
 Story of Flying Robert, The, 4694  
 Story of Life, A, 5243  
 Stream and the Ocean, The, 2375  
 Streamlet down from the mountainous glen, The, 2375  
 Strong Son of God, Immortal Love, 4091  
 Sum sun, sum, 4102  
 Summer and autumn had been so wet, The, 2005  
 Summer is a coming in, 709  
 Sun, The, 1487  
 Sun does arise, The, 1561  
 Sun is a glorious thing, The, 4210  
 Sun is careering in glory and might, The, 1123  
 Sun is down, and time gone by, The, 1035  
 Sun was shining on the sea, The, 1562  
 Sunshine shower, A, 2128  
 Suppose the Little Cowslip, 5140  
 Sur le pont d'Avignon, 5143  
 Surrey, Earl of  
   Happiest Age, The, 1875  
 Swarm of bees in May, A, 1708  
 Sweet and low, sweet and low, 368  
 Sweet is Childhood, 5213  
 Sweet to the morning traveller, 2125

Taffy was a Welshman, Taffy was a thief, 1036  
 Taylor, Ann and Jane  
   Birds, Beasts, and Fishes, 2482  
 Taylor, Bayard  
   Bedouin Song, 5016  
 Taylor, Benjamin Franklin  
   Isle of Long Ago, The, 1650  
 Taylor, Jane  
   Good-night, 390  
   Horse, The, 2180  
   Little Star, The, 198  
   My Mother, 814  
   Violet, The, 200  
 Taylor, Jeffreys  
   Lion and the Mouse, The, 1123  
   Milkmaid, The, 3316  
   Young Mouse, The, 950  
 Teach me, my God and King, 4097  
 Teeny-Weeny, 2009  
 Tell me not, in mournful numbers, 642  
 Tell tale tit, 1708  
 Tennyson, Alfred, Lord  
   Beggar Maid, The, 814  
   Break, Break, Break, 3046  
   Brook, The, 43  
   Charge of the Light Brigade, The, 1782  
   Cradle Song, 1706  
   Death of the Old Year, 2179  
   Defence of Lucknow, The, 3791  
   Deserted House, The, 9898  
   Lugland and America in 1782, 4640  
   In Memoriam, 4091  
   In the Children's Hospital, 4521  
   Locksley Hall, extract from, 5213  
   Minnie and Winnie, 1035  
   Ode on the Death of Wellington, 4617  
   Owl, The, 4688  
   Quotations from, 3863, 4746  
   Revenge, The, 4205  
   Ring Out, Wild Bells, 2179  
   Sweet and Low, 388  
   Ulysses, 1650  
 Tennyson-Turner, C.  
   Letty's Globe, 1749  
   Little Sophy by the Seaside, 1487  
 Ternarie of Littles, A, 2819  
 Terrible Ball, The, 1706  
 Thackeray, William Makepeace  
   Cane-bottomed Chair, The, 3841  
   Tragic Story, A, 1123  
 Thaxter, Celia  
   Sandpiper, The, 4286  
 There are girls for all our losses, 5212  
 There are sounds like flakes of snow falling, 1713  
 There is a flower, a little flower, 4922  
 There is a pleasure in the pathless woods, 4640  
 There is a rainbow in the sky, 5052  
 There is in the wide, lone sea, 1785  
 There, little girl, don't cry, 4265  
 There lived a sage in days of yore, 1123  
 There once was a bird that lived up in a tree, 5050  
 There sat one day in quiet, 1734  
 There was a fern on the mountain, 4863  
 There was a frog lived in a well, 5245  
 There was a jolly miller, 2813  
 There was a king in olden days, 1705  
 There was a king met a king, 3020  
 There was a little boy and a little girl, 2128  
 There was a little boy went into a field, 2726  
 There was a little girl, who had a little curl, 201  
 There was a little man, and he had a little gun, 3799  
 There was a little man who wooed a little maid, 1211  
 There was a little rabbit sprig, 1708  
 There was a little woman, as I've been told, 2650  
 There was a man, and he had naught, 1564  
 There was a man, and he went mad, 713  
 There was a man of Thessaly, 3030  
 There was a monkey climbed up a tree, 1037  
 There was a time when meadow, grove, and stream, 3633  
 There was a young lady of Bute, 1038  
 There was a young lady of Dorking, 645  
 There was a young lady of Portugal, 4100  
 There was a young lady of Russia, 4101  
 There was a young lady of Ryde, 846  
 There was a young lady of Troy, 646  
 There was a young lady whose bonnet, 646  
 There was an old lady all dressed in silk, 3129  
 There was an old lady of Chertsey, 4100  
 There was an old man, 1211  
 There was an old man at a casement, 4101  
 There was an old man in a boat, 4101  
 There was an old man in a pew, 4100  
 There was an old man in a tree, 201  
 There was an old man of Aosta, 4100  
 There was an old man of Apulia, 4100  
 There was an old man of Coblenz, 1038

Weatherly, Frederic E continued  
 What Bobbie Would Like, 3558  
 What Might Have Been, 2724  
 Wee, modest, crimson tipped flower, 1560  
 Wee Willie Winkle, 814  
 Were I a birdie too, 3027  
 Wesley, Charles  
 Gentle Jesus, meek and mild, 5243  
 Jesu, Lover of my Soul, 4397  
 Westwood, Thomas  
 Mine Host of the Golden Apple, 3020  
 Wet sheet and a flowing sea, A, 1560  
 What are little boys made of ? 392, with music, 5142  
 What Bobbie Would Like, 3558  
 What care I how black I be ? 2050  
 What, Charles returned li papa exclaimed, 3557  
 What does little birdie say, 1706  
 What does our country need ? 4855  
 What Every Wise Child Should do, 5053  
 What Everyone Knows, 810  
 What I have for, 5047  
 What is it you ask me, darling ? 816  
 What is the news of the day ? 2813  
 What is the rhyme for porringer ? 2180  
 What Might Have Been, 2724  
 What the Stars Have Seen, 2724  
 What We Need, 1855  
 What's he that wishes so ? 2019  
 When all the world is young, 144, 3348  
 When Britain first, at Heaven's command, 46  
 When cats run home and light is come, 4688  
 When children are playing alone on the green, 314  
 When Eve had led her lord away, 2724  
 When good King Arthur ruled this land, 1560  
 When here the sun is shining bright, 136  
 When I was a bachelor, 2725  
 When I was a beggarly boy 1022  
 When I was a little boy, 1278  
 When I'm put to bed to-day, 3422  
 When icicles hang by the wall, 2915  
 When in the morning we arise, 1081  
 When Letty had scarce pass'd her third glad year, 1719  
 When little Fred was called to bed, 2126  
 When little Sammy Soapbuds, 1124  
 When on my day of life the night is fall'ng, 3630  
 When the British warrior queen, 188  
 When the green woods laugh with the voice of joy, 3272  
 When the humld shadows hover, 5049  
 When the snow is on the ground, 4267  
 When the voices of children are heard on the green, 1856  
 When thou dost eat from off this plate, 4922  
 When 'tis pouring fast with rain, 4694  
 Where'er I take my walks abroad, 2181  
 Where are the swallows fled ? 4527  
 Where are you going to, my pretty maid ? with music, 1124  
 Where did you come from baby dear ? 16  
 Where do you come from river sweet ? 2810  
 Where have you been, my boy Tammie ? 4653  
 Where is the true man's fatherland ? 200  
 Where the bee sucks, there suck I, 89  
 Where the pools are bright and deep, 643  
 White dove sat on the castle wall The, 4207  
 White Hart, The, with music 3848  
 Whither, midst falling dew, 2810  
 Whitting, W.  
 Lternal Father, strong to save, 1852  
 Whittier, John Greenleaf  
 At Last, 3636  
 Barbara Frietchie, 1851  
 Maid Muller, 3271  
 My Playmate 4020  
 Who Can This Somebody Be ? 3277  
 Who comes here ? 391  
 Who led me from her gentle breast ? 814  
 Who is Silvia ? What is she, 3844  
 Who killed Cock Robin ? 319  
 Who would true valour see ? 2004  
 Why is Pussy in bed ? 1830  
 Why the Robin's Breast is Red, 4096  
 Why weep ye by the tide, ladie ? 1850  
 Wilcox, Ella Wheeler  
 Babyland 1457  
 I Am, 2097  
 My Ship, 1782  
 Poverty and Wealth, 2293  
 What we Need, 4855  
 William, 2128  
 You Never can Tell, 2482  
 Will you walk a to my parlour ? 3555  
 Willie's Lodger, 2724  
 Willy boy, Willy boy, where are you going ? 4267  
 Wind and the Moon The, 3140  
 Wind came up out of the east, A, 3793

Wind in a Frolic, The, 197  
 Wind one morning sprang up from sleep, The, 197  
 Winter Song, A, 2015  
 Winter Wind, The, 2015  
 Wish, A, 206  
 Wishing, by Ella Wheeler Wilcox, 2126  
 Wishing, by William Allingham, 951  
 With fingers weary and worn, 2808  
 With sweetest milk and sugar first, 2905  
 Wolfe, Charles  
 Burial of Sir John Moore, The, 813  
 Wolsey, The Fall of Cardinal Wolsey, 2916  
 Woman was old and ragged and grey, The, 5241  
 Wonderful One-Hoss Shay, The, 5045  
 Wordsworth, William  
 Blind Highland Boy, The, 4855  
 Composed upon Westminster Bridge, 4098  
 Daffodils, The, 44  
 Fidelity, 3558  
 I Travell'd Among Unknown Men, 4921  
 Kitten and the Falling Leaves, The, 3420  
 London (In 1802), 4097  
 Lucy, 632  
 March, 1276  
 Ode on Immortality, 3633  
 Pet Lamb, The, 1703  
 Peter Bell A Tale (The Flight of Peter Bell), 4095  
 Rainbow, The, 643  
 Reaper, The, 1561  
 Three Years She Grew, 4021  
 To a Butterfly, 4013  
 To a Skylark, 5049  
 To the Cuckoo, 1705  
 To the Skylark, 2127  
 Work of the Poets, The, 4260  
 World, The, 816  
 Worm, The, 1850  
 Worn and footsore was the Prophet, 5130  
 Wotton, Sir Henry  
 Character of a Happy Life, The, 4013  
 Wreck of the Hesperus, The, 610  
 Wynken, Blynken, and Nod, 45  
 Ye murmers of England, 318  
 Ye sons of France, awake to glory, 4688  
 Year's at the spring, The, 643  
 You are going out to tea to day, 4398  
 You are old, Father William, the young man cried, 611  
 You know we French stormed Ratisbon, 4095  
 You Never Can, 2482  
 You see, merry Phyllis that dear little maid, 3421  
 You shall have an apple 2128  
 You spotted snakes, with double tongue, 2915  
 Young and old, 3348  
 Young lambs to sell, 391  
 Young Lochinvar, 4687  
 Young Mouse, The, 950  
 Young Sophy leads a life without alloy, 1487

## SONGS WITH MUSIC

Baa, baa, black sheep, 1780  
 Bees, The, 4102  
 Boogie Man, The, 4654  
 Child's Evening Prayer, 3122  
 Cuckoo and the Jackass, 3790  
 Curly Locks, 1708  
 Dance a Baby, 2128  
 Ding dong bell, 714  
 Frog he would a-wooing go, A, 1480  
 Girls and boys come out to play, 1016  
 Goosey, Goosey Gander, 2291  
 Here we go round the mulberry-bush, 614  
 Hickory, dickory, dock, 819  
 Hush-a bye, baby, 50  
 I love silence, 2377  
 I saw three ships, 2180  
 Jack and Jill, 5215  
 Ladybird, Fly, 3028  
 Lavender s Blue, 4925  
 Little Lingo, 2726  
 Little Bo peep, 201  
 Little Jack Horner, 1273  
 London bridge is broken down, 2650  
 M N O, 3275  
 O, dear ! What can the matter be ? 538  
 Old King Cole, 4857  
 Old woman tossed in a blanket, 1399  
 See saw, Margery Daw, 391  
 Three blind mice, 652  
 Twinkle, twinkle, little star, 6055  
 What are little boys made of ? 5142  
 Where are you going to, my pretty maid ? 1124  
 White Hart, The, 3848

